



HANDBOOKS OF
PRACTICAL GARDENING

THE BOOK OF
THE
CHRYSANTHEMUM

BY

PERCY S. FOLLWELL

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HANDBOOKS OF PRACTICAL GARDENING
EDITED BY HARRY ROBERTS

THE BOOK OF THE CHRYSANTHEMUM



JAPANESE CHRYSANTHEMUM SOLEIL D'OCTOBRE

THE BOOK OF THE CHRYSANTHEMUM

BY

PERCY FOLLWELL

HEAD GARDENER AT DRUMPELLIER GARDENS



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The Publisher acknowledges the courtesy of Messrs W. Wells & Co., who have kindly placed at his disposal a number of photographs of prize blooms.

THE CHRYSANTHEMUM

ITS HISTORY AND PROGRESS

THE Chrysanthemum is one of our most popular flowers, and of the most useful, whether in the company of late summer and autumn blooming plants in the garden borders, or later in the greenhouse and conservatory, giving us a brilliant range of colour, when the beauty of the outdoor garden is past. Aptly has the Chrysanthemum been termed Queen of the Autumn Flowers.

Although the national emblem of Japan and strongly associated with that country, yet experts on the history of the flower tell us it originated in China, and what is more interesting and wonderful, that it was probably cultivated upwards of 2000 years ago by the Chinese, ere it was introduced into other countries.

The principal information on the early history of the flower appears to have been gathered from the writings of Confucius, who is supposed to have lived about 500 years B.C. This man was a great philosopher in the Celestial Kingdom, and distinctly makes mention of the Chrysanthemum under the appellation of Li Ki.

Later on, or about the time when our forebears were under the influence of the Romans (the world's early colonisers), a Chinaman named T'ao-ming-yang seems to have gained repute in his country by the cultivation of this flower, and the city in which he resided was termed Chrysanthemum City. The Chinese being a peculiar, self-contained race, it is rather remarkable that

at one stage of the world's history they should have been so far advanced in the hybridising and cultivation of flowers, particularly the Chrysanthemum, and then to have fallen away and become quite inferior to other countries in that respect. Without a doubt it is their seclusiveness that has been their undoing in not progressing as other nations in the march of civilisation.

Travellers and botanists who have explored portions of China, and have through their intrepid daring considerably enlarged our list of useful shrubs and trees, deserve all honour.

Down to the present day we are continually hearing of disturbances in the interior of China, especially against Europeans and Americans. Up to about a century ago they held their interior practically from intrusion, and even to the present time do not encourage commerce to any great extent in their midst.

They went into their fields and forests and out of way places for plants to experiment on and cultivate, much the same as we should with our own native plants, did we make the attempt.

The Corn Marigold (*C. segetum*) and the Ox-eye Daisy (*C. leucanthemum*) represent the Chrysanthemum family in our native flora.

It may be generally accepted after much discussion and research by those who have studied the life history of the Chrysanthemum, that the original flower from whence all our cultivated varieties have sprung is *C. indicum*, a small, yellow, single-petalled kind. This is to be met growing wild in parts of Corea, China, and Japan.

A few botanists claim that another variety *C. morifolium* (= *sinense*) has been used by the Chinese in the early stages of cultivation and in conjunction with *C. indicum*.

That the latter flower is the principal one, if not the

only variety that has played so important a part in the evolution of the flower, can be ascertained by the fact that if some of our finest and largest blooms be used for seed purposes, we shall find that many of the seedlings have reverted back in form and colour to the original *C. indicum*.

At what period the Chrysanthemum was introduced into Japan from China in a cultivated form is not known, or may be the Japanese obtained certain semi-wild forms from China or Corea and so worked up a race of their own.

In no other country in any part of the world is the Chrysanthemum held with such esteem and reverence as in Japan.

The flower is used as their national coat of arms. It has been engraved on the swords of the reigning Mikados, and we find examples in colour on their beautiful pottery ware, some of which may be seen in South Kensington Museum and other places. Only recently the Emperor of Japan conferred the Grand Order of the Chrysanthemum on one of our Royal Princes, in acknowledgment of a similar compliment paid him by King Edward VII., who had deputed the Prince to invest the Emperor with the Order of the Garter, as a signal of friendship and goodwill.

Also the most popular fête in Japan is held on Chrysanthemum Day, which falls in the ninth month of the year. The people on that day throw petals of the flower into their "saki" before drinking, as they believe it portends good luck and happiness and has the power of dispelling evil.

Not until the year 1789 was the first advent of the Chrysanthemum into Europe from the Far East authentically recorded. In that year a M. Blancard introduced three plants to his native town, Marseilles. These were regarded at the time as large-flowering

Chamomiles, not Chrysanthemums. Only one of the three survived, and some plants from this were sent to Kew by a Mons. Cel, a nurseryman of repute near Paris, a year later. The Old Purple was the name adopted for them.

M. Ramatuelle, a French writer, considerably helped to popularise the new-comers by writing favourable reports to some of the papers printed at that time in France.

A hundred years previous to this date a Dutch doctor, Jacob Breynius, and a botanist of high repute in those days, mentions the Chrysanthemum as *Matricaria japonica maxima* and gives a list of six varieties.

Again a Mr Sabine, secretary to the R. H. Society, mentions, in 1764, a plant *Matricaria indica* growing in the Apothecaries' gardens at Chelsea in 1764.

With the two last instances no true record can be traced that these were types of the large-flowering Chrysanthemums as was introduced in 1789 by Mon. Blancard. Whatever form or variety they were they soon perished as nothing more is heard concerning them.

PROGRESS

From the year 1790, the date of the Chrysanthemum being sent into this country under the name of the Old Purple, we hear but little about it until six years later when it is figured and described in the *Botanical Magazine* as having flowered at a nursery in Chelsea, and is given the Botanical name of *C. indicum*.

The nurserymen and gardeners in England were soon able to appreciate its value, and we read that in the year 1824, twenty-seven varieties were being cultivated at the Horticultural Gardens, Chiswick.

This collection had been considerably helped by a Mr John Reeves, the Society's agent at Canton, and a

Mr Parks, a traveller, who acted on their behalf in sending importations from China.

In 1825 an exhibition of *Chrysanthemums* was held at Chiswick, when upwards of 700 plants in full bloom were staged by the Royal Horticultural Society. It was deemed a great success, and the Society distributed cuttings and plants in and around London to the various nurserymen, which largely assisted in popularising and increasing the cultivation of the *Chrysanthemum*.

There seems to have been some difficulty in finding suitable names for the different varieties. To translate the Chinese name into English was no light task, being far too quaint and fantastic—Yellow Buddha's Head; Dragon's Brains; The Heavenly Interview, given to a variety maybe that had gone skywards at a rapid rate and wishing to eclipse all others in height. These were the interpretation of some.

And the fashion of naming flowers at that period after persons or places of renown was not followed or adopted as at the present day.

Thus *Chrysanthemums* were named in our own language from the shape or general appearance of the flower, as the expanded purple, the starry purple, the quilled pink, clustered yellow, and so on. For a considerable period, until the exhibition at Chiswick, florists both at home and in France had been experimenting with a view of saving and ripening seed from some of their *Chrysanthemums*. Success did not happen until 1826 when like many other matters of importance it was attained quite by accident. A retired officer in the French Army living at Toulouse one day discovered on some of his plants bearing withered flowers, seed.

This he sowed in the following year and was rewarded by the seed germinating successfully, and in due time giving him some new varieties to the then limited collection. His name was M. Bernet, and to the present

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day he is considered by many in France the father of the Chrysanthemum, as he continued the work of hybridising and raising in after years. His portrait was painted in oils and hung in the local hall, in recognition of his services. England soon followed his example, and in 1832 a Mr Wheeler of Oxford raised some seedlings and exhibited them before a meeting of the Royal Horticultural Society at the end of that year, when he received a Silver Medal from the Society in recognition of his efforts.

Other growers in England followed him and an incurved variety named Nonpareil, even said to be met with at the present day, was raised by a Mr Freestone of Norfolk soon after. Then in the year 1833 a German horticulturist published the first known treatise on the history and culture of the flower.

In 1834 fifty-three distinct varieties were supposed to be grown, and this number, with so many enthusiasts in the field, was soon largely increased.

The following year we hear of Mr Chandler, a nurseryman of Vauxhall, who by the way made Chrysanthemums a speciality, obtaining some good forms of the incurved type from an amateur grower who had raised them in Jersey.

The two first Chrysanthemum shows recorded in the country took place at Swansea and Birmingham respectively, in the same month and year, December 1836.

The next event of importance in the annals of the flower is in the year 1838 when Mr John Salter went to reside at Versailles in France, with the purpose of raising new varieties, chiefly the incurved type. The reason of his going to France was without a doubt the suitability of the climate for the hybridising and ripening of the seed, as compared with our own indifferent and variable weather. In that he succeeded beyond, perhaps,



GROUP OF CHRYSANTHEMUMS

his most sanguine hopes, for he has left on record to the present day some of the finest forms of the incurved section.

We will now pass on to the year 1841, notable for the appearance of two weekly papers, both of which rank of some importance at the present day. In the *Gardeners' Chronicle* for that year we find frequent references to the Chrysanthemum—How to flower in Spring and Autumn, to raise from seed, soil, as a florists' flower, etc.

Also there are advertisements from May, Salter, and Chandler, all having Chrysanthemums for disposal.

There is a note on the latter's establishment at Vauxhall, with a list of the best varieties of Chrysanthemums growing there, of these I append a few :—

Conqueror, a good early white Lucidum, silvery, with regularly incurved petals ; Vesta, white, good form with broad petals ; Exquisite, incurved white ; Goliath, large with yellow centre ; Compactum, small, late Invincible, cream, with inflexed petals ; Celestial Beauty, blush ; Empress, fine lilac pink, with petals somewhat twisted ; Perfection, incurved pink ; Chancellor, large quilled pink ; Elegans, double pink ; Pulcherrim, deep pink, very full ; King, pink, with an orange-tinged centre, flower very double and evenly incurved ; Campestrini, dark crimson double good shape ; Casimir Périer, pretty, flat-petalled variety ; Sultana, fine dark crimson ; and Grand Napoleon, velvety crimson ; Duc de Calynian, red petals, tipped more or less with yellow ; Arago, buff ; Marie Therese, fine bright red ; Conductor, fine double orange ; Adventure, double yellow ; and Gouvion St Cyr, double incurved, orange with bronze markings on petals.

Two matters to which much importance was attached in those days were the shape and symmetry of the flower and the colouring, which had to be of a decided tint or tone, otherwise the plant was discarded.

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We need only inspect blooms of say the Queen type, or any of the earlier raised incurves, to show how rigorously the raisers kept to those ideals.

Perhaps of all men connected with the progress of the Chrysanthemum, Mr Robert Fortune might head the list. It is principally through his services in connection with the Royal Horticultural Society in the Far East, that we have with us to-day the Pompon and Japanese type of flower.

He was sent out by the Society in the year 1842 to collect botanical specimens in China. During his travels he found on the island of Chusan two small flowering Chrysanthemums, which were held in much esteem by the natives. These he sent home to England where they thrived, and one variety particularly was thought much of and was named the Chusan Daisy.

Some of the continental growers, though, saw possibilities of a new race of Chrysanthemums by crossing this with some of the older types, and thus we have the present race of Pompons, perhaps not so beautiful or showy as some of their brethren, but all the same interesting to many.

The year 1860 finds Mr Fortune again on a voyage of discovery to the Far East. Besides revisiting China he also journeys to Japan, and in his sojournings there he discovers certain forms of Chrysanthemums or rather certain flowers without form as cultivated by the Japanese.

Seven varieties of these weird looking flowers he sends home to a Mr Standish, nurseryman at Bagshot. These were grown and exhibited later without finding much favour in the eyes of Chrysanthemumists. They were late in flowering and this did not commend them, as the general desire among growers at that period seemed to be to obtain earlier flowering varieties.

They were slowly adopted, but never made much

progress until the late seventies when they became more popular, and they have gone on by leaps and bounds, leaving other kinds almost at a standstill, notably the incurves, until we wonder when the zenith of the Japanese section will be reached.

Besides Mr J. Salter, who raised so many varieties of sterling value in the early days and was so ably assisted by his son Mr A. Salter, we read also of Mr Charles Smith of Guernsey. This amateur is said to have raised three thousand seedlings in one year. Of course the weeding-out process would be enormous, and the percentages of good ones left would be necessarily small.

He ripened the seed on plants growing against a warm wall in the open air, and seems to have been immensely successful in this respect. Pompons and incurves were the only two varieties he cultivated for seed-raising.

Coming to a little later date we have next perhaps in order of merit M. Simon Delaux, a Frenchman residing near Toulouse. He has raised an enormous number of first-class flowers. Starting in the year 1864, when he obtained some of the importations of Mr R. Fortune, he has had an almost uninterrupted run of success chiefly with the Japanese forms.

Others of note are Major Carey and his gardener M. N. Priaulx of Guernsey; Mr James Downton, who raised that good old flower "Elaine" which has not been surpassed to the present day for the purity of its snowy petals; Mr A. Forsyth of Stoke Newington; Mr John Thorpe and Dr Walcott: the former of the twain is termed the father of American Chrysanthemums.

At the present day most of our new varieties are raised within our own shores, and great credit is due to our growers and enthusiastic amateurs for the many beautiful forms brought out. At the same time we still obtain good things from France, and among the present-

day raisers of that country one name stands out very prominently among its fellows.

I am referring to M. Calvat, who gave us that very popular variety F. S. Vallis and another almost equally as good, Mdme. Carnot, in its day. These two blooms have held very high positions among exhibitions and the former is still in fashion. Mons. Calvat has also sent out many other forms worthy of note.

Among our own present day men we have the familiar names of H. J. Jones, Lewisham; Norman Davis, Framfield; Godfrey, Exmouth; Wells, Merstham; and Sydenham, Tamworth—the latter making a speciality of hardy outdoor forms. These names represent the chief Chrysanthemum growers of Britain.

Among the raisers we have many enthusiastic gentlemen who have assisted in a very material way to embellish our gardens and greenhouses with better varieties in later years—Mr Chas. Shea, C. Harman Payne, D. B. Crane, E. Molyneux, and others.

Still the work goes on, and we begin to wonder in a vague kind of way what the Chrysanthemum world will be like at the end of the present century, if progress continues at the same rate as it has done during the past thirty years.

I don't think it will be possible ever to obtain much larger blooms than are grown at the present day. I am sure the monster blooms one sees at shows are almost too large to be considered artistic. I have belief that in the future the fashion will tend to the decorative side. We shall have very beautiful forms in singles, semi-doubles, and other pretty families. The season will extend over a longer period than at the present day, and the colours will be even more brilliant, beautiful, and lasting.



MISS CLAY FRICK. PURE WHITE SPORT FROM W. DUCKHAM

This sported in the extreme north of Scotland, and won the 50 dollar prize in Chicago for the best novelty for 1907 (in connection with the American Chrysanthemum Society).

CULTURE

To be successful in the cultivation of the Chrysanthemum, whether for pleasure or for profit, for exhibition or for decorative purposes only, it is absolutely essential that one must be systematic, and attentive to the needs of the plant, from the start to the finish.

Every successful exhibitor or grower brings all his thoughts and faculties to bear on what he undertakes. There is no haphazard or slipshod method employed. Everything is carried out in a definite, prearranged manner. Some people will say the culture of the Chrysanthemum is easy. This may to a certain extent be true. At the same time there is a wide difference between plants or flowers that are grown in an indifferent manner, and others that have had unremitting care and attention bestowed upon them. The beginning of the Chrysanthemum year is, I consider, when the principal exhibitions are past, and the plants are being prepared for the production of cuttings after the flowers have been removed.

This period will be in the latter days of November or early December.

The flowering growths should be shortened down to within about five inches from their base. The plants should be placed in a cool house, free from frost, and as near to the glass as possible. Some growers advise turning the plants out of the pots, reducing the ball of soil a little, and replacing them in a somewhat smaller size.

This system is only necessary if the plants have been

very highly fed with artificial manures to produce blooms for show purposes, the soil becoming saturated thereby with chemical matter. This would tend to produce rank, soft shoots, or growths unfit for cuttings.

The usual plan to adopt, and a much simpler one, is to take the cuttings direct from the plant as it stands.

It sometimes happens, and is a rather vexing matter, that some of the best varieties or exhibition sorts refuse to throw up cuttings from their base. To guard against occurrences like this, it is as well to leave somewhat longer, say 18 inches, the old flowering stems of those varieties addicted to this habit. These plants may be placed in a slightly warmer house (always as near the glass as possible), to encourage them to throw up growths from their base.

Failing this, cuttings must be taken from the stem. Stem-cuttings should only be resorted to in extreme cases, as in the above instance. They will almost infallibly show a bud during the propagating process, or when root action commences, and this must be immediately pinched out.

This stem-cutting will thereby upset all calculations for making growths and the timing of buds later. A root-cutting, especially if it can be taken off just below the surface with a few rootlets attached, has more to commend it, as it is often quicker to get away. Others should be taken off and cut cleanly through the stem just below the joint, removing the lower leaf or leaves previous to inserting in the soil.

About $2\frac{1}{2}$ to 3 inches is the average length to trim a cutting. Should there be more growth showing on a plant or plants than is needed for cuttings, carefully remove the weakest at the earliest opportunity: this will help to strengthen the remaining ones. Avoid overcrowding of the stools (as the plants when cut down are termed).

A list should be kept and the numbers frequently gone over, and only those retained which are necessary for cuttings. A cold frame may be utilised to store some in, failing house room, but the frost must be kept at bay.

The soil for cuttings should consist of leaf-soil, loam, and some clean, sharp sand. The two former should be passed through a sieve of $\frac{3}{8}$ -inch mesh. The proportions should be about 2 parts leaf soil, 2 of loam, and 1 of sand, well mixed together.

The pots for single cuttings should be about $2\frac{1}{2}$ inches diameter. They must be scrupulously clean, both inside and out. If new ones, a soaking in clean water for half-an-hour will improve them.

To place a cutting or plant into a dirty pot is a system to be condemned, as eventually when the plant makes roots, and requires moving into a large pot, it will not come away readily; the roots cling to the sides of the dirty pot in such a way that many will be broken and torn, besides loosening the ball of soil, ere a separation is effected.

This needs only putting into practice to be proved, and it seldom or never happens, if clean pots with a fairly smooth inside surface are used.

The period for taking cuttings may commence about the second or third week in December, and be continued on through January and February into spring, according to the varieties and quantities required, and whether for early or late work.

Some growers don't begin cuttings until the New Year, as they maintain the root action is quicker then and propagation is easier.

No set rule can be laid down as to the exact time of commencing; much depends on the condition of one's plants and inclinations.

A few crocks should be broken small and placed in the bottom of each pot, and over this a little moss or

loam fibre, to prevent the small soil from working down and choking the drainage. The pots may then be filled with the soil, and made moderately firm to within about $\frac{1}{8}$ of an inch from the rim. A pinch of loose sand may be scattered on the surface and the cutting inserted in the centre of the pot, with the aid of a blunt stick or dibber slightly larger in diameter than the stem of the cutting. The blunt end of a pencil will answer the purpose well. When inserting the cutting into the hole made by the dibber, care should be taken that the soil is filled up and made firm about the cutting, especially at its base.

A good plan is to push the dibber down into the soil, about half an inch away and parallel with the cutting. This will effectually close up the soil round about, and a sharp tap with the bottom of the pot upon the bench or table, to further settle the soil, will conclude operations.

My remarks in the foregoing on the size of pots suitable for cuttings have applied mainly to the large growing forms of Chrysanthemums, both Incurves, Japanese, and large Anemones.

For the Singles, Decorative, Early Flowering, or Border types, several cuttings may be inserted around the side of a 3 or a $3\frac{1}{2}$ inch pot.

This means a considerable saving when space has to be taken into account, and the results are usually satisfactory if they are shifted singly into pots of suitable size, as soon as sufficient root action has taken place.

To allow the cuttings to remain too long together is a mistake, as the roots become more and more entangled, and separation is a difficult process, many roots being damaged and broken, consequently the plant gets a very poor start,



MRS. W. WELLS

A PROPAGATING FRAME

The site for a propagating frame will have to depend largely on surroundings. I have seen a brick frame used with hot-water pipes running through. This I would not, however, recommend, for two reasons. It is always difficult to inspect the cuttings regularly (which should be at least once a day), if a keen frost is reigning. Secondly, to turn on heat, even if mats are used, is an unwise principle, as it will cause the cuttings to droop and the leaves to wither through not being accustomed to artificial warmth; this would give the cuttings a check, and would tell very seriously on their future progress.

The best site for a propagating frame is in a cool house, perhaps one that has been used for tomatoes or other such crop the previous summer, and one where frost may be fairly well excluded.

The frame should be placed within about 2 feet from the roof of the house, and may consist of a few rough boards nailed together with some sheets of loose glass to go over the top. The lower parts of hand-lights make capital receptacles, where other things fail, or even a few bricks built up, with some glass to cover, will answer the purpose.

In a house with a frame of this description, cuttings may be watched daily, no matter what the weather may be out of doors.

Ventilation may be given for it will not injure the cuttings, seeing they are enclosed under the glass sheets.

The cuttings may be stood on ashes placed in the bottom of the frame, and should be well watered with can and rose when first placed in their new abode. The soil should never be allowed to get dry after this.

If moisture gathers too much on the foliage and causes mildew or decay, the glass sheets may be left off for a little while each day, preferably in the morning, and the

reverse side placed next to the cuttings. If mildew shows badly a little powdered sulphur may be dusted on the affected part.

It must not always be accepted for truth that if the foliage of a cutting is moist it will not require water at its base. Moreover, the soil may appear moist, when really it is not so.

Many cuttings are lost in this way, and not in Chrysanthemums alone does this happen.

When a cutting is rooted, it may be removed from its frame or propagating box and placed on a shelf, in the same house if possible, and close to the glass. This will keep the little plant sturdy and strong.

Care must be taken, if heavy frosts are prevalent, to mat or cover that portion of the roof under which the plants may be during the night season. Failing this plan it will be wise to remove them to a lower stage or farther from the roof, and replace them in the morning.

If some cuttings should appear to be very tardy in forming roots, it will perhaps be advisable to put in a few extra ones if the varieties can be obtained. Cuttings will sometimes stand for weeks before making roots. These seldom grow into first-class plants. Usually a cutting will commence top growth and root action at the same period.

THE FIRST POTTING

As soon as the plant has made sufficient roots, it may be placed into a larger pot, one of about $3\frac{1}{2}$ to 4 inches diameter will do. The soil may be mixed a little coarser than for the cutting stage, also less leaf soil and sand; two parts leaf soil, $3\frac{1}{2}$ to 4 loam and half or little more of sharp sand.

When potted they may be returned to the house for a time, and be carefully watered and lightly syringed

on bright warm days, preferably in the early afternoon. If sufficient space cannot be found for them in the house, they may be transferred to a cold frame, facing south or south-west, and with some good, clean, coal ashes for a base to stand upon.

The frame should be thoroughly cleansed before use, and a keen watch kept for slugs. These pests appear to have a wonderful knack of discovering anything to their liking.

Immediately a cold frame is occupied, they make their appearance, although it may have stood previously empty for weeks. They can do a deal of damage in a night by taking out the tops of some of the most promising plants.

A little lime dusted around the edge of the frame is a good preventative.

Immediately the plants are in position the frame should be kept close, and only a little air admitted on warm days. Water should be sparingly supplied too if the weather be at all cold or damp.

A careful look-out for mildew must be kept, and on its first appearance, the affected plants should be dusted with sulphur, both under and above the leaf.

Certainly the frames will need covering with some material, to keep out frost, just as when the plants were in house.

As time goes on and the plants get more established, the ventilation may be increased until the lights may be lifted right off on all favourable days. They will also require more water, in proportion to their growth. Should green fly make its appearance the plants should be fumigated without delay.

This is a very simple process nowadays, with so many cheap and efficient fumigations on the market, so different from the old style of burning tobacco paper or rag in buckets and tins with all their nauseating and sickly fumes. Another plan is to dust tobacco powder in the

points and on the leaves where principally affected. This should be done over night and the powder may be syringed off in the morning.

At the end of March or beginning of April, plants should be making rapid growth and ready for another potting. To allow plants to become at all pot-bound at this stage is throwing away one's chances of good results later. The sizes of pots this time may be from 5 to 6½ inches diameter, according to nature and size of plant. The soil may be correspondingly coarser and heavier, with the addition of a very little bone-meal or other stimulant. All the Incurves and finer growing varieties may be placed in the smaller sizes, as in the final potting they will not require so large a size as some of their more vigorous neighbours the strong-growing Japs. They should all be returned to the frames with the exception of the early flowering section that are intended for planting out. These will not need a second potting, but may be stood out under a wall facing south or west to harden off, and may be finally planted out about the end of April, in the places appointed for them.

Of course much will depend on the weather in this respect: seasons vary so and localities must also be taken into account.

It will be advisable to keep the newly potted plants in a closer atmosphere for a few days to admit less air, and if the weather be bright and sunny frequent light syringes will be beneficial, also a piece of light tiffany may be used as a shading through the middle of the day, but only if necessary through flagging. This may also apply in the earlier stages of the plants.

Several days of continuous dull weather will weaken plants, and a burst of strong sunshine following will often cause them to droop badly. It will be wiser under the circumstances to use light shading and admit less air, until they recover their usual robustness. Frequent



MRS. H. R. HAGGARD

light dampings overhead with a can and rose and syringe will also help them, but this should not be continued too late in the day. The foliage should always be dry during the night, at this time of year.

When plants are newly potted they should be allowed to become fairly dry, that is the pot should have a hollow sound when rapped with the knuckles, ere the watering-pot is introduced. They should then have two or three successive waterings, preferably with a rose affixed to the can to prevent the washing up of the new soil.

This will thoroughly moisten all parts of the soil, and then commences activity of the roots.

I think it is generally agreed among all growers that it is an advantage to allow a plant to stand a reasonable time before watering, always supposing the soil of the plant was in a thoroughly moist condition, ere it was transferred to another pot.

To attempt to repot any plant, when the soil is at all dry, is one of the grossest evils. Unless the whole of the soil is being shaken away from the roots, as in the case of orchids and tuberous-rooted plants, exceptions may be made. And to water plants as *Chrysanthemums* just previous to potting is wrong.

Unless a sufficient time is allowed to elapse, only a portion of the ball of the plant becomes moistened, while another part remains dust dry.

This may remain dry for an indefinite period in the newly potted state, and be very detrimental to the health of the plant.

Too much water given to a newly potted plant often sours the fresh soil, and this in turn will retard the plant in throwing out new roots, and much valuable time will be lost.

THE FIRST BREAK

This term is used when a plant shows its first flower-bud, which usually takes place during the month of May. Some may show buds earlier than this—much depends on the vigour of the plant variety, locality, and other causes: no definite time can be stated.

The bud must be immediately removed. This will cause the plant to throw out side growths. Three of these may be selected to remain, and all the others removed by pinching out. Should the plant be somewhat tall and inclined to thinness when showing its flower-bud, a portion of the top may be removed at the same time; this will make the plant a little dwarfer, and the side growths will be equally as strong as those taken from the very top of the plant. Always choose the three strongest growths and likeliest looking. These should be tied to a stake inserted in the pot, when long enough. To leave them without support is only courting disaster, as they are very liable to be broken off with the wind or other causes.

Should a plant fail to show a bud by the middle of June, or even a little earlier than this, I would suggest removing its point. This will cause it to throw forth its side growths.

To let it run up on a single stem only means one bloom, whereas when three or more growths are taken up, it means the corresponding number of blooms later.

Of course I am referring to plants grown for large blooms, by keeping to three growths. Other varieties, as the Singles, Pompons, and Decorative, may have most of their side growths left. This will cause them to develop into bushy little plants right away, and their growths may be regulated later by pinching and staking out, and flower buds removed if too numerous, at the proper time.

All the *Chrysanthemum* family should now be in healthy growth, and will need all the time and attention that can be given them, in the matter of staking and tying, rubbing or pinching out unnecessary growths, also keeping a sharp watch for all insect pests.

As the season gets warmer, so the plants may be exposed more and more, until the latter part of May, when they may be left quite unprotected.

THE FINAL POTTING

Thoughts will now turn to this, one of the chief events in the life of the plant, and it will be worth one's while to make preparations for the potting in plenty of time.

It will be an advantage if the soil can be placed under cover, and allowed to lie in heap a few days before using.

Nearly every exhibitor or grower has his own pet formula or compost for the final potting.

I will give a good general mixture that should suit most growers.

Three to four barrow loads of good turfy loam that has been in stack for not any less than six months (this period will ensure the death of the grass roots), broken up to the size of turkey's eggs. About one barrow load of manure from a spent mushroom bed. This should be passed through a very coarse sieve to remove pieces of straw, etc. If mushroom manure cannot be obtained, the same quantity, or rather more, of leaf mould may be used in a fairly decomposed state. Half a barrow load of wood ashes or crushed charcoal, about the same quantity of coarse, clean, river sand, a ten-inch potful of finely crushed bones or bonemeal, and a seven-inch pot of soot should complete it.

Should the loam be light or sandy, less sand will be needed in the mixture; but should it be the reverse, a few shovelfuls of old mortar rubble, pounded small, may be used with advantage.

Again, if one has only turf of poor quality to draw upon, it will be a good plan to have some in stack for a twelvemonth with some farm-yard manure sandwiched between each layer of turves. This will put some vim into the material, and will be useful for all purposes. The potting material should be well mixed by turning several times, and allowed to lie a few days, as suggested, before being used.

In the matter of adding bone or other artificial manure to potting compounds, it will be prudent to use rather under than over the stipulated quantity, as one can always add afterwards to a plant by top-dressings, etc.; whereas, should the soil be a little overdone with manure, it may quickly turn sour, and this would mean a very serious check to the plant.

Most manufacturers of repute that send out artificial manure usually enclose a very carefully compiled scale for using their manures for all purposes, and this will be fairly safe to act upon.

The pots may be sorted out and carefully crocked. A good-sized piece of crock should be placed in an inverted position over the hole at the bottom, and over this should be placed some smaller pieces, until a sufficient depth for drainage has been formed. Over the whole of the drainage, pieces of turf or other material should be placed, that will prevent the potting soil working down among the crocks and so allow the latter to act their part in the life of the plant.

In commencing the potting, see that the plants have been sufficiently watered, carefully remove the crocks without injuring the roots, pot firmly.

Push the soil evenly around the plant with a thin,



MARY MASON

wedge-shaped potting-stick before ramming firmly, thus avoiding hollow spaces forming between plant and pot. Do not fill the pot too full with soil; it will be an advantage, probably, if sufficient space can be left for top-dressing later.

SELECTION OF SITE

The best position for plants to stand in is a south or south-westerly aspect.

Many growers place them on each side of a garden path running north and south or nearly so, thus getting the sun's power evenly distributed on both sides of plants. I think the best method is to give up a portion of ground in or near the garden. The site should be carefully chosen, not only for the full share of sunshine, but also if some shelter can be gained from strong winds, which often cause sad havoc among Chrysanthemums.

Before the plants are put out, some posts should be driven into the ground and made sufficiently firm to admit of stout galvanised wire being stretched from one to the other. This wire is to support the plant and prevent it toppling over by the force of wind or other causes. Two wires will be needed, one fastened about 2 feet 6 inches from the ground, and the other 2 feet higher. The distance between rows should at least be 4 feet. This will allow sufficient room for watering and other purposes.

A good coating of ashes should be given the ground, and it will be of great benefit to the plants if sufficient boards can be got to stand them on; old floor boards or hoardings answer the purpose well. They not only prevent worms from entering the pots, but also are of great assistance in not allowing the plants to get water-logged, which they are apt to do in wet seasons by standing on sodden ground. Avoid using boards that

have been creosoted. This is a deadly chemical to plants, and a sure weed-killer if applied as such.

In arranging the plants in rows, keep all labels on one side and all varieties together, and Japanese, Incurves, etc., in their sections. All this will be a great advantage to the grower later, when the time comes for bud-taking, housing, etc. He will be able to tell at a glance how each variety is doing, and act accordingly. Whereas, if varieties and sections are all mixed in general confusion, the labour will be doubly difficult.

Each plant should be carefully staked as soon as possible after the final potting has taken place.

The stakes should be chosen of such lengths as it is considered the growths will reach. Light bamboo canes, from 3 feet upwards, are very suitable for this purpose. They are cheap, strong, and clean, and generally last for two or three seasons.

When the plants are arranged in their places under or against the wires, the stakes should be tied to the latter and the plant to the stake; this will assist in preventing them blowing about in any gales that may arise. Also later on some of the growths may be tied to the wires in the same way.

Of course I am referring chiefly to the tall-growing varieties that are to carry large blooms. The dwarfer kinds, Earlies, Singles, and Pompons, will not require this support, but only such staking as is necessary.

Water should be given the plants more freely as they become more established, indeed it will be a necessity to look them over two or even three times a day during the hot, dry weather, in the early morning, midday, and again in the afternoon.

To ascertain the condition of a plant if requiring water, the pot should be rapped with the knuckles, or a small mallet made for the purpose. If the pot gives forth a hollow sound similar to the tone of a bell, water

may be given ; but if there is no ring, then water should be withheld.

With a little practice one soon becomes proficient in this method of watering, and it is probably the best system of testing the dryness of a plant.

If the day has been hot and dry, a syringing in the late afternoon will benefit the plants immensely. Rain water should be used for all purposes; failing this, water should be stored in large butts or cisterns open to the sun's rays, which will help to soften it considerably, making it more suitable for plant life. In many nurseries large cisterns are placed on towers, from which all supplies are drawn, and these cisterns are kept full by either pumps or water laid on from a distance. In districts where the water is largely impregnated with lime this is a most useful course, for after being exposed to sun and air it loses its hardness and becomes more like rain water. Lime water often causes whitish markings on foliage when used for syringing or dipping purpose, unless allowed to stand a time as suggested. Unremitting attention must be given the plants during this season, tying in all growths to their supports that are intended to carry blooms. All side and useless growths should be removed at the earliest opportunity ; if allowed to remain any time they take a certain share of nourishment out of the plant, which should be carefully retained if good results are expected later. Useless wood is an abomination, whether in plant or tree.

SELECTING THE BUDS

WHEN the time arrives for choosing, or "taking," the buds, as it is technically termed, some considerable skill must be exercised if successful results are to be obtained.

First of all there will be the variety to consider, the condition of the plant, and, if for showing purposes, at what date the bloom will be required.

Then the different stages for buds.

The first or crown bud is the one to form after the natural May break. It usually comes in August. If too early in the month, say before the second week, it is pinched out, and a growth is taken up immediately from where pinched until another bud forms, and this is termed the second crown bud. Should this bud be removed, which is seldom necessary, we have the terminal, which is the very last, as its name implies, that can be obtained on the plant.

The majority of the blooms are taken on the first or second crown, according to the variety and which suits best.

The second crown bud will often come a deeper, warmer colour than the first. We may take the variety Chas. Davis for instance: the first crown bloom is often very pale, almost to yellow, while the result from the second crown will often prove a bronze tone.

It must not be taken for granted that all colours will come better on the second crown, though in the majority of cases it generally is so.

The great drawback to the second crown is its lateness in blooming and thinness of flower, sometimes bare in the centre.



J. W. BLACKBURN

The lateness can often be circumlocuted and the bud taken in August by the following plan.

Instead of waiting to allow the bud to form in May, pinch in April the point of the growth. This will forestall the May break as it were, and the growths will be earlier, consequently the crown bud will show earlier than if waiting to appear in the natural way. I cannot advocate this for all growers. It will suit those in the south, but in the far north they may often have to rely on their first crowns, unless favoured with a particularly good season.

The latter are far more handicapped than the former in the choice of buds, and usually have to take first crowns, through the season being colder and shorter than in the southern area.

Some may question what constitutes the north, and what the south portion.

I think the very north of England and Scotland might go together, and the rest of England and Ireland as south.

It is difficult to define even at that, as districts in Scotland vary considerably.

A few miles south-west of my district, the summer-flowering Chrysanthemums are quite three weeks earlier than with me, in fact vegetation in general is much in advance.

I merely give this as an illustration, and every grower must find out how best he or she is suited and act accordingly.

When obtaining plants from nurserymen or Chrysanthemum growers, advice is generally tendered gratis as to the best method to employ for each variety, taking the locality and season into consideration, and what bud will meet the circumstances.

The cultivation and raising of new varieties among Chrysanthemums has now reached a very high order.

Each variety brought out is entered in the National

Chrysanthemum Society's stud-book as follows : Raiser's name, pedigree of flower or plant, description, and the treatment suiting it best, and when certificated. Of course I am referring to first-class kinds.

Nearly all buds should be taken during the last three weeks of August, and none later than the first week of September.

The best time of day to inspect them and select buds is undoubtedly in the early morning, unless the day should prove dull and cloudy. The growth will naturally be so much fresher and firmer under these conditions, and the removal of the superfluous buds around the crown will be much easier.

It is not a good plan to attempt the removal at too early a stage, or it may happen that the bud intended to remain may be broken off in the operation, and then all one's time and labour will be lost. Better allow the buds to become the size of small peas before removing, and this can be easily managed if daily attention is given them. Again, it is not wise to allow the buds to get too forward, as by so doing they would rob the chief bud of its strength and do it incalculable harm, possibly handicapping it from becoming anything like a first-class bloom. The point of a penknife (a small one) is a very good instrument to use when taking buds, or even a steel pen nib.

HOUSING AND WINTERING OF PLANTS

TOWARDS the end of September it will be advisable to commence getting under cover some of the earliest of the large blooming section. Those with buds rather prominent will be safer indoors, for a slight frost unexpectedly happening might do mischief to some of the unfolding petals. Rain and wind too are often unpleasant factors at this period.

When housing the plants they should be given as much space as possible, also as much overhead light as is permissible. Too many growers make the fatal mistake of bundling them into the houses, packing them like sardines in a tin, as though the whole season was finished, and there were little or nothing more to do except to watch them develop their blooms. There is little possibility of a plant doing itself justice under such circumstances. Far better grow a less quantity and give them more room and freedom. Each plant should have sufficient space around it, so that its foliage may remain just clear of its neighbours. It will then be in a position where it can have individual attention as to watering, disbudding of side growths, etc. There are always a number of side growths which spring away from every plant almost as soon as it is placed under cover. These should be regularly removed, otherwise they will soon run out the strength of the plant, every scrap of the latter of which is needed for the development of the bloom.

Where houses in their entirety cannot be devoted to the housing of the 'Mums, the next best thing to do is to get part of a house, where the plants can be grouped on the

ground-floor. The blooms on their developing can be better watched than when placed high up on staging and shelves.

Vineries or fruit-houses, that have finished their season, are very good for this purpose. In the case of vineries, some of the laterals of the vines may be shortened back to about half their length. This will let in considerably more top light, and in the case of peach or fruit-houses try and reduce some of the foliage on the trees by shaking. Leaves in the earlier houses will generally be falling at this date.

Ventilators should be left full open night and day until frost sets in severe, and all heat should be shut off pipes, excepting in very dull, damp weather, when a little warmth may be introduced to dry up the atmosphere, always having ventilation on when this is taking place.

A very keen watch will need to be set for fly, which quickly makes its appearance and spreads with great rapidity. Fumigating with some vaporiser, as XL, will generally make short work of most species of fly affecting plants, and is very simple in the method of application. It is only necessary to ascertain the cubic capacity of the house and use sufficient compound accordingly.

For fumigating, it is best to choose a quiet, damp evening, the vapour being retained inside longer, all ventilators of course being closed during the operation.



W. LUXFORD

INSECT PESTS AND DISEASES

LIKE all other classes of plants, Chrysanthemums get their full share of attack from insects. The most prevalent is perhaps the green-fly.

These creatures will find their way to quite small plants in the early season, and their descendants will be found attending the plant in its old age unless a continual warfare is waged against them.

When the fly attacks the plant in a young stage, the safest plan is to fumigate the house or frame that contains the plants. Choose a damp, quiet night for the operation. Wind will soon blow out the vapour, which will mean fumigating over again; as the fumigant will not have had sufficient time to act upon the fly. Should it be found next morning that all the fly is not dead, another slight fumigating may be given. This should be done before the day gets far advanced on account of having to keep the premises closed. If impossible to fumigate, owing to high winds or other causes, the next best system is to dust tobacco powder over all the parts affected. This should be syringed off the following day. If allowed to stay on for too long a period I have found some tobacco powders to have a tendency to mark the foliage.

When the plants have grown and have been placed permanently in their summer quarters, fumigating will be out of the question. The only remedies then will be to dust with tobacco powder, as previously suggested, all points under foliage and any place where the fly is likely to harbour.

Another very good and efficient remedy consists in

spraying with a weak solution of one of the various forms of Insecticide now on the market. I have always found Bentley's first-rate if applied according to directions supplied with the can or drum. The solution or wash may be put on with a syringe or garden engine, the evening being the best part of the day for the operation. This should be followed by a good syringing with plenty of clean, soft water next morning.

For washing fly out of the points of the growths or crevices, I think there is nothing better than one of the little pneumatic hand spray-diffusers. These little engines hold about a quart of liquid and can be held with one hand, whilst the other can be employed in steadying the growth or foliage that is being acted upon. Once the plants are housed in the autumn we can revert again to the easier and less troublesome system of fumigating, or to use a more correct term, vaporising. This should take place once or twice every week before the blooms become fully expanded.

Large blooms badly infected with green-fly are not a wholesome sight, nor is it so to see the insects travelling about on a white table-cloth, having dropped out of some blossoms maybe that have been used to decorate the lunch or dinner table. It is marvellous how quickly they seem to breed and fill a large bloom with their progeny.

BLACK-FLY

This insect is not perhaps quite so troublesome as his fellow the green-fly. He does not keep up a continued attack all through the season like the latter, but is more in evidence during the summer and early autumn. He comes at the summer period in swarms or myriads, covering fruit-trees, bushes, and plants in general. Not quite so severe on Chrysanthemums, but still precautions must

be taken by keeping plants well sprayed with Insecticide. Quassia extract is a good remedy.

I once saw some rows of broad beans badly infested with black-fly, while Chrysanthemums standing in close proximity to them were almost free. Both had been sprayed to clear these pests.

THRIP

This is an almost invisible enemy, often escaping the naked eye. It lives in the points of the growths and feeds on the leaves and buds, doing damage which is unobserved at the time, and only when the bud or leaf is almost fully developed can the disaster be ascertained. Malformed leaves and irregular buds are often the chief outcome of the thrip's attack.

Frequent attention should be given the plants in the growing season for this pest. A pocket-microscope is a useful instrument for this purpose. The same remedy may be applied as in the case of green and black fly, and with a small hand-spray, as previously recommended, the points may be washed out, care being taken not to use too great a force, as the points of the Chrysanthemum shoots are naturally tender and easily bruised.

EARWIGS

This is a most troublesome enemy, working iniquity mostly during the night, and there is scarcely a Chrysanthemum ground in the country that is free from its attacks. It is to be found in nearly all parts of Britain, and being provided with a pair of wings, as well as being most active on its feet, can make a fairly extensive round of the neighbourhood in which it resides. Dahlias and Chrysanthemums are the two plants which he most

favours, and he can do either plant irreparable damage in a single night. It feeds like the thrip on the points, especially when the bud is forming. Some varieties of Chrysanthemums it prefers to others. Niveus, that grand late white, I have often seen badly disfigured.

The best method of destroying this pest is to place portions of broad bean stems at the base of the plant, or better still, obtain some stems of the hogweed or cow parsnip, cut them into lengths, leaving a joint at the end of each, and place these at the base near the stem of the plant, and fasten some to the stake supporting the plant higher up, so that the insect may readily enter the mouth of the tube when on his nightly depredations. These tubes should be examined every morning, carefully removing them from their positions, and by giving them a sharp tap on the toe of one's boot the insect falls out and can be promptly destroyed.

CATERPILLARS

These animals are very troublesome in many districts. They attach themselves to the edges and underparts of the leaves, feeding on them, and often escape detection for a considerable time. The only system of exterminating them is by hand picking and crushing them under foot. When they are prevalent, a very sharp watch should be kept on the plants, not only when out of doors, but also after being housed. They are often carried in with the plants, especially in cases when a frost is threatening and plants have to be hurried indoors. It is impossible in such cases to give each plant separate attention. They often hatch out from the egg quite late in the season, probably on the plants when indoors.

One other insect I have heard described as the skip-jack, very hard to capture on account of its



MRS. W. KNOX. GROWN BY AN AMATEUR IN REDHILL



EARLY OUTDOOR CHRYSANTHEMUM HORACE MARTIN

jumping habits, is credited with doing a good deal of harm to *Chrysanthemums* by feeding on them, but I have not had much experience with it.

Having described the insect foes of *Chrysanthemums*, I think I am justified in saying a word in praise of the lady-bird, perhaps our best ally in insect life. That, and its larvæ—"Niggers," I think, is the term used by the hop-farmers—feed largely on the eggs and offspring of the "green-fly," and should never be destroyed for that reason.

MILDEW

First and foremost in the list of diseases is mildew. This is with us all through the year, and is the more prevalent in wet and cold seasons. It very often attacks young plants in the early spring, and its coming is often heralded by a cold east wind. Care should be taken in ventilation, never letting cold air direct on to the plants. Too moist an atmosphere is another frequent cause of mildew appearing. We have a grand remedy for this disease by dusting on flowers of sulphur or black sulphur. The latter is more suitable, perhaps, when plants are in the show houses, as it is not so noticeable. Both should be dusted on when the foliage is slightly damp, as it will stay better. Always dust the underpart of the leaves, for I think mildew is more frequent there. When out of doors and mildew is bad, some growers use two parts sulphur to one part finely slaked lime for dusting on and find this a very good remedy.

RUST

Rust seems to affect certain districts more than others. I have seen it stated that *Chrysanthemums* grown near smoky towns are almost immune from it, and I think

there is a good deal of truth in the statement. It makes its appearance on the leaves in large, irregular, brown blotches.

At the first indication of its presence, no time should be lost in treating the affected parts to a spraying of paraffin emulsion. This can be made by adding one wine-glass of paraffin to four gallons of soft or rain water. Thoroughly churn this together with the aid of a syringe before applying, as, should the crude paraffin touch any part of the foliage, it will quickly eat its way through. After each syringe-ful has been administered, the mixture should be again churned; or it is better if two persons can assist, one churning whilst the other sprays the affected parts. A very useful syringe for all such purposes is the Four Oaks Undentable, with the angle joint spray attached. This is a most useful implement for all garden purposes, and has found favour all over Britain. With the addition of the angle joint it is possible to spray the under leaves of the dwarfiest class of plants with as much ease as the taller ones, and from any direction.

THE DAMPING OF BLOOMS

Perhaps there is no other form of disease so disheartening to the grower, or attended with more fatal consequences, than damping. When this damping or rotting of the core claims a bloom as its victim, it may at once be cut off and cast away, there is absolutely no recovery. It comes generally when the bloom is about three parts developed, with surprising suddenness. A small, damp, brown spot may be noticed at the base of some of the petals, which in a day or two will have spread considerably, and all petals affected will droop and drop off, or rot away.

It is generally attributed to too gross feeding. Immediately it makes its appearance all stimulants should be withheld, and the atmosphere kept as light and dry as possible. In fact, from the time the Chrysanthemums are housed, the atmosphere should be kept in this condition. Reduce ventilation at night, and should the day break wet, damp, or foggy, do not increase the former in any way, but allow a slight warmth from the pipes to be felt through the houses. Also another rule should be observed. Do not over-water plants at any time, particularly in dull weather; give sufficient and no more, and never allow pools of water to form in the path, or lie in the house, as this is a direct incentive to a damp atmosphere, which may bring all kinds of disasters in its train.

STIMULANTS

CHRYSANTHEMUMS need a large amount of nourishment during their growing seasons, and this is an absolute necessity where good results are looked for later when producing their blooms. One of the safest and best stimulants that can be given them is freshly gathered droppings from a deer park or sheep pastures, about a barrow load placed in a tank or large butt and filled up with water. To this may be added some soot, tied up in an old sack or bag of fairly coarse texture, and allowed to soak a few days before being used. Many use cow manure in the same manner, but I do not consider that it has the same virtue. It appears to waste more quickly in the water, and cakes the surface of the soil more quickly.

The only bother to avoid in using deer or sheep droppings is the choking up of the can spout. Use one of wide and short barrel. Some, again, use farmyard drainings, very good in their way, but perhaps not equal to the first-named. Usually it is quite safe to apply this liquid on every second or third day and it may be continued up till the time the bloom has almost expanded. The only time it should be withheld is immediately after the plants have been repotted. As soon as the roots have commenced actual growth it may be used.

When the plants are housed, and all the buds have been taken, they should be further encouraged by the use of stronger manure, either as a top-dressing or applied in liquid form. Some growers top-dress with

good quality bonemeal mixed with sifted loam, others use one or other of the various manures manufactured expressly for Chrysanthemums. One top-dressing should be sufficient to carry them through, and, as in all matters of this kind, some care will be needed as to how it is applied. If put on too strong it will tend to burn the roots near the surface, instead of acting beneficially. Sulphate of ammonia is a grand aid, in careful hands, when blooms are commencing to expand, or a little earlier. It gives depth to the colour of the petals, and the flower a richer and purer tone. The safest time to administer this chemical is when the bud is swelling, and, preferably, use in a liquid form. Sometimes it is sprinkled on the surface of the soil and watered in, but the best plan to adopt is to dilute in water or weak liquid manure. About an ounce dissolved in three to four gallons of water is sufficient, and this should be given not oftener than once a week.

When the blooms are about half expanded, all stimulants may cease; to continue too long after this might lead to disaster.

Some chemicals, like sulphate of ammonia, vary a good deal in strength, and it would be advisable to test it rather under the stipulated quantity when first using.

HYBRIDISING AND RAISING OF NEW VARIETIES

CROSSING or hybridising Chrysanthemums is extremely interesting, and is becoming very popular among our own growers, as evinced by the fact that many of the finest varieties brought out within recent years have been raised in this country.

Years ago, in the early days of the Chrysanthemum, some enthusiasts went to reside in France for the sole purpose of hybridising, it being thought that this country was too cold and sunless for the experiment. Any amateur may undertake the system of crossing flowers of this family, providing they have a greenhouse supplied with artificial warmth, the latter being a necessity in assisting to keep a dry and warm atmosphere. Dampness or undue cold is fatal to following out this experiment successfully. The bloom that is to be impregnated with pollen, and the one that pollen is obtained from, must both be in a perfectly dry state. Again, heat will be needed in an artificial form to assist in ripening the seeds, should the result of the hybridising warrant a success. It usually takes about ten weeks to ripen seeds from the period of operation, this process going on through the dull months of the year, hence the need of artificial warmth. In choosing varieties to fertilise, there are certain principles to observe, and one should always be guided by them in the raising of new kinds. Even under the best of circumstances the number that are qualified as good is exceedingly small in proportion to the total raised every year.

There should be a definite aim in view. For instance, take a Japanese variety; the flower of good appearance as far as shape is concerned, but poor in colour. The idea would then be to cross it with another form that was proficient in colour, but lacking another point that the first one could claim, and so from that union, if successful, might be produced a form containing the best features of its two parents. Whatever flowers are fertilised, either the pollen or the seed parent should have what the other lacks; both combined should have as nearly as possible all the necessary features that constitute a model bloom.

Of course both the parent flowers may be typical forms in their way, possessing all the necessary qualifications: there would be no harm if a cross could be effected in such an instance. What should be avoided is crossing weedy varieties. Without a doubt these latter are the easiest to fertilise, but prize cattle are not bred from weedy parents.

Where hybridising is to be attempted it will be necessary to grow blooms specially for the purpose. To attempt crossing some of the large blooms that have been fed upon stimulating matter would only end in failure, as this treatment tends to increase the size of petal and flower, but at the same time exhausts the fertilising organs, and renders them useless for this object.

The greatest success in crossing is obtained with blooms that have been subjected to a system of starvation, and the method of procedure may be as follows. When old plants have been retained from the previous year for the sake of cuttings or growing on again, if possible, cuttings may be taken from these not earlier than end of May or June. Insert three or four around the side of a $3\frac{1}{2}$ -inch pot and strike in a cold frame. When well rooted, they may be potted off singly into the same sized pot, using soil of a poor description for the

purpose. Keep them growing out of doors until the buds are formed and swelling, when they may be removed to the warm end of a greenhouse, giving them all the light and air possible. Give no stimulant in any form.

A little disbudding may be practised, leaving one bloom to each growth. Try and arrange for blooms to all expand about the same period. This will be a great advantage in giving a better choice of flowers for fertilising. Now supposing the blooms to have well expanded, and they are considered in a fit state for fertilisation, a little explanation is perhaps essential on the formation of the flower and when in a fit state for pollination.

The flower is made up of two sets of florets termed "florets of the ray" and "florets of the disc." Ray florets consist of the extreme outside row of petals, as one sees plainly in the single chrysanthemum, and is made up of the female organs, the stigma and ovary, the latter not always found in a fully matured form. Next to the ray comes the disc floret, and this latter covers the whole inside surface of the head or capitulum of the flower, and the organs consist of both male and female, being hermaphrodite in a sense. At the same time nature has forestalled self-fertilisation by allowing the male portion, the anthers which surround the stigma, to throw their pollen first. The stigma does not open till some days later to receive pollen, and rises above the anthers. The florets all open from the outside edge first and follow in, ring by ring, to the centre, the male portions first and then the females, so that the former are always ahead of the latter. If a bee or other insect alighted on a flower it would usually do so on the edge, and, crawling inwards to where the honey would be secreted, would naturally pass over the open stigmas before reaching the males, so that in going from flower



W. WELLS. AN AUSTRALIAN VARIETY FROM THE WELLS-POCKETT SET

to flower it would of necessity carry the pollen from one flower to the stigmas of another.

If one examines a flower under a microscope they will readily understand the construction of the principal parts, and this will largely assist in the experiment of fertilisation. Having selected two blooms it is decided to cross, one as the pollen bearer, the other as the seed parent, with a small pair of scissors clip off all the petals of the latter flower to just above their stigmas, and leaving the outside row, or ray petals, intact. This will make it easier for crossing. Obtain a small camel-hair brush, and about noon on a fine warm day proceed to take some pollen from the disc of one flower, and apply it to the stigmas on the disc of another with the brush. Proceed with this for two or three successive days until it is considered that a cross has been effected.

Another plan is to remove all the petals of the pollen-bearing flower, sever it from the plant, and shake or draw it gently over the stigmas of the seed flower, until all the pollen has been scattered. A good plan to tell when the stigmas of a flower are ready for fertilising is by observing the anthers on the centre of the disc. When they are throwing pollen, then the stigmas on the outside edge next to the ray florets will be in a fit condition for receiving the same from another flower.

It has been proved by repeated experiments that the seed from florets on the outside edge of disc always give the best percentage of double flowers, the nearer florets to the centre giving greater quantities of singles. This should always be borne in mind where one's ambition is to raise a first-class flower.

The next process, and perhaps the most difficult, is the ripening of the seed. The house should be kept at a night temperature of about 50°, with the atmosphere as dry as possible both night and day. Give the plants as little water as possible. Some add a little weak stimu-

lant, just to help swell the seed at this period, but whatever is given it must be done in a sparing manner. Bend the blooms directly over the pipes, and should any fly or other insect make its appearance, fumigate immediately. When the flower has faded, and the seed is considered to be swelling away, the stem may be sharply bent, allowing the flower head still to hang over the pipes so as to obtain the necessary warmth. After a period of a few weeks the stem may be broken right off, the centre of the disc removed to prevent an unnecessary quantity of singles, and the head of the bloom placed in a clean dry vessel of some description, the latter near to the pipes, until the time arrives when a gentle touch with the finger will cause the ripe seed to fall out.

This can be sown almost immediately in shallow pans filled with some light sandy compost, and placed in a frame which possesses a gentle bottom heat.

When germinated and the seedlings large enough to handle, prick off into other pans and then into $2\frac{1}{2}$ -inch pots and so on, when in the space of a few months one will be able to realise the result of his labours, and if success has attended the efforts made, by the developing of even one good bloom. Undoubtedly hybridising requires a great amount of time and patience, at the same time there is always a certain amount of pleasure attached to it.

Some growers by severing the blooms with portions of stem, and placing them in vessels containing water have successfully ripened seed in this manner. Mr J. Salter accomplished this in the early days.

I should have previously remarked that cuttings from suitable varieties for hybridising may be obtained from plants that have been pinched and cut back also when breaking from the first bud. Sometimes more growths are thrown than needed, when the spare ones may be utilised for this purpose.



MARY RICHARDSON

This single-flowered 'mum is considered the most fascinating of all chrysanthemums. The colour is reddish-salmon. Perhaps gained popularity quicker than any other.

RAISING NEW KINDS FROM SPORTS

A CONSIDERABLE addition of good kinds has from time to time been added to the general stock, by what is termed sporting.

This name is applied to some new plant that has been taken from another, through the latter throwing up a growth containing a bloom that is of quite a different colour to the others on the same plant.

Some plants are more addicted to sporting than others, and we may take as an example the pink *Mdme. Marie Masse*. From that plant we have several good things, as *Horace Martin* clear yellow, *Ralph Curtis*, or *White Masse* as it is sometimes termed, and *Crimson* and *Bronze Masse*.

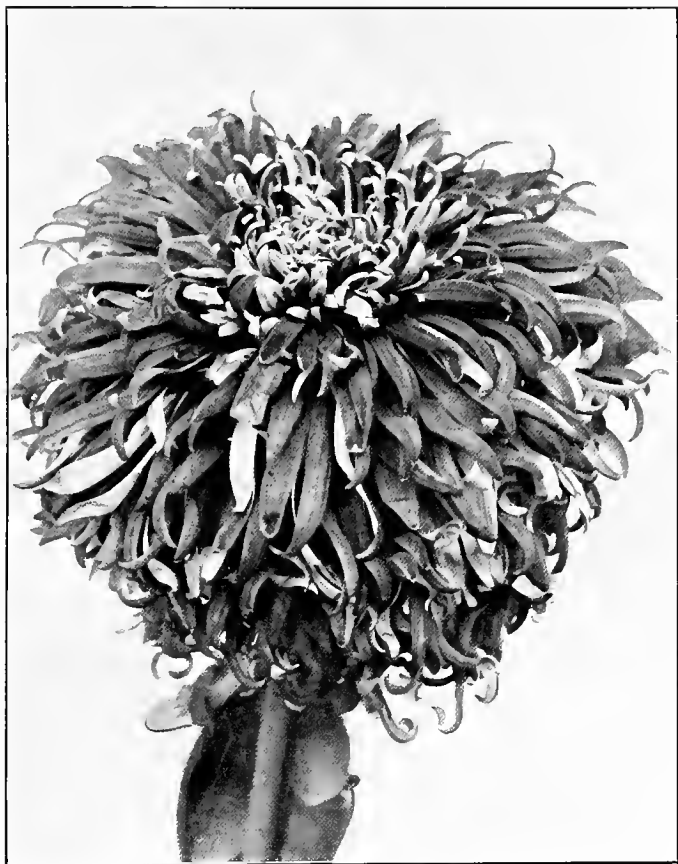
What a stir *Horace Martin* made when it first came out, being then, and even at the present time, the finest early yellow in existence. It was sent out from a little nursery on the borders of Bedfordshire, and all the profit accruing from the sale of the stock went to the banking account of the proprietor's son, a lad just commencing school. A lucky youngster, and a nice nest egg, as it must have totalled a good bit. Not only do Japanese varieties sport, but incurves as well, so it behoves any that has *Chrysanthemums* to keep a keen watch on their doings as there is a likelihood of getting a good thing.

If a plant is discovered to have sported, and the sport is worth growing on, the method of procedure would be something as follows :—

Remove all other growths from the plant, excepting the sport. If the former does not appear to be showing

any growths on its stem, the plant should be turned out of its pot and planted in an old cucumber bed, or other place where there is a gentle warmth, laying the stem along on the surface of the soil, keeping it sufficiently moist. This should start it into growth, when cuttings may be taken off and inserted into small pots; grow these on and see what the flowers resemble the following season.

If they all come true and of the same colour as the sport, they may be grown on again, using only base cuttings this time, to increase the stock. Should, however, any of them show signs of reverting to the old form, they must be discarded and placed with the general stock. The plants that are still true may be grown on another season, so as to make positively sure that the sports are fixed before sending them out on the market. It is a great mistake to send sports or seedlings out too soon. Trade growers will always pay a good price for a desirable novelty.



MRS. J. WELLS

PREPARING BLOOMS FOR EXHIBITION

OF all the Chrysanthemum family the incurved section requires the most care and attention when dressing them for show. Many condemn the system of dressing blooms, but I am afraid blooms, especially the incurves, would soon lose favour with the public if they were shown exactly as cut from the plant, as some suggest. I do not consider there is any more harm in assisting a bloom to develop and show its petals to the best advantage, than there is in thinning a bunch of grapes. Nature can always be assisted in a legitimate manner.

If a bloom is assisted properly from the time it is about half expanded, very little will remain to be done when it is cut for exhibition.

Each one that is considered a likely candidate for the show bench should have frequent attention during development. If the petals are found to be too crowded to allow proper promotion, remove the central ones by the aid of the forceps, an instrument all growers should have in their possession.

Take out sufficient to leave a small clean cavity into which the point of one's finger might be inserted. This will allow the remaining petals to curve inwards to the centre in a more natural manner.

Sometimes a good bloom will show the "eye" rather early. This means the exposing of the short quill florets said to be primarily due to taking the buds too late, but of this there is some doubt, as it will appear occasionally in the best regulated of plants. These

short seed or quill florets should be at once carefully removed with the tweezers or forceps, then assist the petals remaining, gently inwards, to fill up the cavity. Many growers allow the heads of the incurves to hang downwards while developing, it being claimed for this method more even curving of the base petals. Any petals deformed or decayed should be removed at all times immediately they are detected, and not left till the time the bloom is required. Some petals will show an inclination to reflex, that is, to curve outwards. These must be assisted into their proper position with the aid of the forceps, dexterously drawing the forceps, up the petal from the base to the point, and so bringing it back to its right place.

Japanese do not require dressing like the incurves, all that is necessary being to remove any deformed or outstanding petals that detract from the general appearance of the bloom. A very simple and effective way of assisting the petals of the Japanese into their correct places, is to hold the bloom head downwards by the stalk and give it a gentle shake. This method may also be applied just before placing them on the show bench, after removing from the packing case.

The anemones and reflexed forms, like the Japanese, require little or no dressing, likewise the neat little pompons of an occasional obtruding petal may be all that is necessary to remove.

STAGING BLOOMS

I am glad there is a movement in the right direction of exhibiting Chrysanthemums in a more natural manner than the cup and tube system.

I refer to the way Chrysanthemums are shown, on long stems arranged in vases, a saner and certainly more natural manner than wedging them down flat, or nearly

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so, on a green board, just huge mounds of petals, a very insult to nature.

This method was introduced at the Royal Horticultural Society's Meetings some years ago, when held at the Old Drill Hall, but it failed to be taken up by Chrysanthemum Societies at the time. The blooms I saw there had been cut with stems from 12 to 18 inches or more in length. These were set up in plain stone jars, three blooms to each jar in varieties, the larger blooms, both incurved and Japanese, were arranged at the back, and the smaller blooms on shorter stems to the front. Between the jars was arranged a groundwork of small ferns in pots and other dwarf plants, the whole arrangement being decidedly pleasing. Neither the blooms of Japanese or incurves seemed at all lost in the arrangement, and looked as natural as if growing on the plants.

Another point worth noting too is, one is able to ascertain better the general character of a flower, and how it would appear on its plant, when shown with its own foliage.

WHAT CONSTITUTES A GOOD BLOOM

There are so many points to be taken into consideration, as to the qualities of a bloom, that it is difficult to pronounce what one would consider the most essential one.

Size goes a long way with many, but this is of little avail when being judged, if there are no other redeeming features to back it up. A bloom must be large without coarseness, evenly balanced, and shapely, nearly as much in depth as in diameter, of good colour, not the least bit stale, the petals must be uniform in size, not ragged, but crisp and clean, and the colour must be clear and deep, not thin and washy, nor uneven in tone. These

are the principal points in a first-class flower, and lucky is the man who hath his stand full of them, for they will help him along the highway for a prize.

When an exhibitor is showing blooms in tubes arranged in stands, it will be his duty in the first place to see that the size of the stand in breadth and length conforms to the schedule. All these little points are most important, many a one finding to his regret that the omission of some little detail has lost him a prize. If his stand be in order, his next business will be to select the blooms and arrange them to the best advantage. The largest blooms are usually placed in the back row, the medium ones in the second, and the smaller at the front. Colours should be arranged so that they do not clash, but rather one colour should be made to show up another in an advantageous manner; that there be unity in the whole, in harmony. Should the exhibitor possess an extra good bloom of any variety, let it be placed prominently, yet avoid having too small a bloom as its neighbour, or it may appear to dwarf the latter, and so upset the balance of the exhibit. Each flower is allowed so many points when being judged, and so many for the exhibit in general, and the whole totalled up. The blooms should in all cases be correctly named, by writing neatly on small cards at the front of each row, or by pasting on front of stand, and written according to the order they are arranged.

Of course mistakes will sometimes happen with the best of judges, especially where their duties are of a very onerous nature, and time is a matter of great importance when a show is billed to open at an early hour.

Should a competitor discover a mistake whereby an opponent has gained an advantage, he should at once seek out the secretary or one of the committee, when the judges will be recalled to give their decision, and

should the competitor's application be a legitimate one, the vote will of course go in his favour. An unsuccessful competitor should always refrain from condemning judges before the public or other exhibitors. It shows exceedingly bad taste, and is more prevalent among novices than old competitors. The latter generally have a good idea who will be the successful ones before the judges have made the awards. Experience teaches wisdom. It is unsportsmanlike, too, to cavil at another competitor, who has perhaps beaten you by a few points. Unless you have cause for airing your grievance, far better take the beating philosophically, quietly determining to have revenge at the first opportunity. It is often remarked that there are equally as good fruit, flowers, plants, etc., grown by non-exhibitors as one sees at shows.

If showing is to be done, the exhibitor must have not only his employer's sanction but his interest as well, or it will be very uphill work for the former. Most employers, however, are generally willing to encourage their gardeners in this respect, and where a mutual agreement can be arrived at, it tends to benefit both parties. The gardener will endeavour to produce the finest blooms or crops possible, the proprietor gaining in this sense, whilst allowing his employee to seek recompense at the show bench.

RETARDING BLOOMS

WHEN a grower decides to compete or exhibit at shows, it is well to examine the schedules of such at an early period. By doing this he will be able to marshal his forces, as it were, by retarding or pushing on his blooms, as circumstances may demand. Blooms may be retarded fully a week or ten days in a cut state, that is from the time they are fully expanded, by placing them in water in a cool, dark shed, and with a fairly dry atmosphere. The latter can be managed by allowing a gentle current of air to pass through the building by opening window or skylight. A disused stable, facing north, answers the purpose well, or even a mushroom shed or portion of fruit room if it can be given up for the purpose. No dust should be allowed to settle at any time on the petals, as it is often difficult to remove, and will cause the blooms to wear a soiled, faded look. It is a good plan, even better perhaps than the former method, to retard blooms when expanding in the early stages by placing them in cooler situations. This needs a good deal of experience and judgment, and is only gained by constant practice. All blooms that have been cut should have the water changed every day, and it is a good plan to cut a small portion off the stem at the same time, the water being taken up better. The stem should always be cut of sufficient length to allow of this paring later.

PACKING BLOOMS

Where blooms are to be exhibited on stands they should all be arranged beforehand, each one in its



MRS. T. C. NEILL

place, and the whole stand fitted into the case provided for it. When their destination is reached it is an easy matter to lift them out and give them a few finishing touches, ere placing them on the stage or show bench. Should blooms be required, however, to be shown on long stems, the system of packing must needs be entirely different. It will be advisable to obtain boxes or trays of sufficient depth to take the largest blooms without unduly crushing the petals, and of sufficient length and breadth to take a dozen at least of such blooms in one layer. If the boxes are made of a uniform size several may be tied together, one above the other, when going long journeys.

Each bloom should be wrapped in a sheet of clean tissue paper, and the best method is to bring the paper round under the bloom and so catch up the lower petals, then gather the corners together and give them a slight twist. This will keep them clean and also prevent petals hooking to one another when being removed from the box. The best material for packing, I consider, is tissue paper shredded small and just crumpled through the hands. It is soft, light, resilient and clean, and does not hang to the blooms or foliage. My first experience of this system of packing was a wedding bouquet of choice orchids, and although travelling many miles by rail, there was not a bruised petal.

The next best material is undoubtedly wood-wool, used so largely in packing fruit. Before using it should be thoroughly beaten on a mat or cloth to remove all dust, this will also help to open it out, as it is generally in a very compressed state when purchased, and will then be quite fit for use.

The foregoing hints on packing blooms for shows may also apply to dispatching quantities on long distances for decoration or other uses. Of course space would have to be lessened for large quantities, and in the case of

smaller blooms two or more layers might go to one box. There is a general routine in preparing for all exhibitions, and the novice who is anxious to make a start in this direction cannot do better than act as assistant to some experienced exhibitor.

He would only need to attend one or two shows, where he might obtain a mass of useful information, far more easily and quickly than by reading volumes written on the matter. He would see the different methods adopted in arranging and staging the different exhibits, also the way of entering in different classes, etc. Yes, there is much to be learnt from old show hands, by even a casual observer.

JUDGING

To be a judge at one of the leading shows in the country is an honour, but not always a sinecure. That they must be men of integrity and merit, and be thoroughly conversant of the subject they have to decide upon, is absolutely essential. Judges are usually chosen from the ranks of old exhibitors, or men who have made a name for themselves in the horticultural world, that is, when shows are held in connection with such. I can instance a noted Chrysanthemumist who made his name as an exhibitor some twenty years ago, in fact had an unbeaten record at all the principal shows. During a conversation with him in the Waverley Market at Edinburgh, at the time of the International Fruit Exhibition, he informed me he had been coming most regularly for some time past to act as judge at the Chrysanthemum show held in that city. And I know his engagements in other parts for the same purpose are equally frequent.

When judging is in the hands of men like this any attempts at faking or unfair showing is quite out of the question, as they know by experience just where to look for an exhibitor's weak points, no matter how pleasing the general arrangement may appear to the eye. Exhibitors may generally rest contented that they will get justice and fair play when men of this calibre are employed and they usually are if it's a show of any worth.

When anyone is invited to act as judge at a show, it will be considerably to his advantage if he can obtain

a schedule sometime beforehand, and make himself thoroughly conversant with the rules and regulations connected with it. This applies equally to an exhibitor. Many a good exhibit has had to be passed over through not conforming to the rules of the society. Perhaps the infringement was very trivial, yet such has lost many a one a good prize. Judges must do their duty, no matter how their sympathies may lie. Many gross blunders have occurred in the drawing up of schedules, the wording often being entirely different to the meaning intended to be conveyed, and has been the means of causing angry discussions between competitors, judges, and officials.

The system of pointing each exhibit or part of such, and then balancing the whole, is the most fair system that could be devised. The Royal Horticultural Society has drawn up a set of rules in book form for judging by points almost any subject that comes within the sphere of horticulture. It can be had from the Secretary of the Society for a small sum, and is excellent in its way, and is very helpful to any one taking up duties as a judge.

At large shows judges generally go in pairs and take so many classes. When a difference of opinion arises between them on any subject, it is customary to call in another from a neighbouring class to act as arbitrator.

THE GROUPING OF PLANTS

THERE is great diversity of methods employed in the arranging of plants, whether as a competitive group at a show, or an arrangement in the conservatory or show house.

When grouping for exhibition or competition at a show, the man that can show some originality in his scheme of grouping often has the odds in his favour, though his exhibit in other respects may fall short of an opponent's. Points are always given for arrangement and general effect, and this is worth bearing in mind. The great idea in grouping is to centralise the colours. At the same time there must be an harmonious blending of the whole. The grouping of colours has a very telling effect when well managed, and not only to Chrysanthemums does this apply. We have it forcibly put in herbaceous border, rose beds, and in many other ways. And each colour should lead in easy stages to another, and not allow strong contrasts to clash together. Also the different heights of the plants should be studied. There is great scope again for the intelligent mind. Avoid having the plants like a flat surface, or a sloping bank. Break them up into small groups if the arrangement is a large one, a kind of undulating appearance broken here and there by a fine foliated palm or other plant. Of course the front of the group should generally consist of the dwarfed plants, as they would be lost to a certain extent if placed in the far background. The whole mass should appear pleasing to the eye, each part seen without difficulty, and some of the

finest blooms placed where they may easily attract attention.

Many exhibitors work out their system like a dress rehearsal at home. The plants are roughly arranged in a shed, or large house, in a space of the same size as they are to occupy at the show. This also gives one a good idea of the quantity that will be required, and saves the bother of having several superfluous plants on one's hands after the grouping is finished. It is, however, always advisable to include an extra plant or two in case of accident or other emergency.



MRS. W. BLACKWOOD

BUSH AND TRAINED SPECIMEN PLANTS

To many, one of the most interesting features at a Chrysanthemum show are the specimen plants. These are chiefly confined to the bush or pyramid style at the present day. At one time all manner of shapes, such as balloons, candelabra, fountains, and standard trees, were resorted to. It requires a great amount of patience and skill to carry out these designs successfully.

The wonderful compact bush plants, with healthy foliage and covered with several dozen blooms of good quality, require a deal of care and attention. They are chiefly confined to growers in or near centres where Chrysanthemum shows are held. The principal thing in growing specimen plants is to propagate them early, and grow them on in a slightly warmer temperature than the general run, until the latter part of May. The plant should be stopped at a convenient size, to assist in throwing out growths, and these again in their turn at every third or fourth joint, until a sufficiency has been obtained.

The chief points to be aimed at in the culture are good blooms, healthy foliage, a shapely plant, in as small a pot as possible. They should be kept staked out during the growing season, not allowing the growths to crowd each other in any way, removing any weakly ones, and keeping the plant sustained more particularly when getting any way pot-bound, with a little stimulant either sprinkled on the surface of the pot or given in the watering.

It is surprising what can be grown, even in a pot-

bound condition, by the judicious use of stimulants. Any of the fertilisers that have been mentioned previously will do. The buds are taken in the usual way, and if possible all at the same time, as this means so much later. If the blooms do not develop all at about the same period, the plants are useless for exhibition purposes. Of course a little retarding or pushing on may always be resorted to. The final staking should not be carried out till all the buds have been taken, in fact many leave this process till a few weeks previous to the exhibition. A good deal of judgment is required in this matter. The stakes should be pushed into the pot before tying takes place, to form the skeleton, as it were, of the shape the plant is to take, and the growths must be deftly arranged and tied up so that the stakes may be almost completely hidden by the foliage. The plants may look a little disturbed for a day or two with the growths and leaves twisted, but they will soon adapt themselves to their new position. As soon as the buds have been selected that are taken, disbudding must be resorted to rigorously, otherwise the strength of the plant will soon be diminished, if allowed to make worthless wood or flower-buds. The varieties chosen for this work are generally those of well-known reliable kinds, many of the new editions will not conform to the test.

CHRYSANTHEMUMS FOR MARKET

It is often surprising, considering the seemingly rough and ready manner in which Chrysanthemums are treated by market growers, that they obtain such exceedingly good results. No doubt the plant lends itself a little to such treatment, at the same time growers only choose those varieties of a strong and ready constitution, such plants as will give a profusion of bloom for a minimum amount of labour bestowed upon them. Should a variety not stand the test for robustness, no matter how good the flower might be, it would be promptly cast out, and another would take its place.

What a chance market growers now have in selecting varieties compared with twenty years ago. If we take the early flowering ones, in those days Madame Desgrange and its sport G. Wermig were considered nearly the only possible varieties. Now there is the Masse group, a variety of colour in itself and every part useful. Pink, yellow, bronze, cerise, crimson, and almost pure white.

Walking through the streets of Glasgow in the early autumn, a quantity of white Chrysanthemums in a florist's window caught my attention, and I turned to examine them. It proved to be the White Masse on fairly long stems disbudded down to one bloom, and very charming they appeared. The blooms were just of a useful size for making up in bouquet or any other purpose.

When the early varieties are done, and they last a good time, there is then ample choice of colour through

the autumn, in fact almost up to Christmas and the New Year. We have at that period Niveus, a grand late white, and of remarkable durability either on the plant or in a cut state. Also its sulphur sport, an exact counterpart in other respects. There is W. H. Lincoln, a bright, good standing yellow; Madame Faber, a deep pink, and extremely useful colour at that period; *Sou de Petite Ami*, an old favourite, but going fast out of date. Red and White Cannings and a host of other serviceable varieties. Following these there are a few for spring work, such as Tuckswood white; Tuxedo, a useful late yellow; Princess Victoria, creamy white; Mdle. Louise Charvet, one of the best late pinks; Glory, a fine rich, golden yellow; Red Victoria, a sport from Princess Victoria; and several others. For cut-flower work, and this is the principal trade done (pot plants often being at a discount in the market), growers have a special system. They strike cuttings of most varieties through March, April and May, according to the season, and for early or late work different dates may be taken. The usual plan is to put the cuttings into small, shallow boxes, and root them in frames kept closed, and when large enough and weather suitable, plant them out in quarters on the open ground. The hoe is kept going through them during the summer, and mulchings and waterings given during the hot, dry weather. They are kept pinched until a sufficient number of breaks have been obtained and loosely tied to stakes to prevent damage from gales. When autumn arrives, and a nip of frost is in the air, the majority are lifted and put under glass.

The houses will have to be cleared of their remaining crops of cucumber, tomatoes, etc., to receive them. The beds are roughly dressed over, and into these the Chrysanthemums are planted. They are kept shaded for some days by whitewash being applied to the outside



HAROLD WELLS

of the roof, and will have a good soaking at the roots, which will also help settle the soil round about them.

Many of the early flowering forms will be allowed to remain outside, and supplies of cut-flowers will be obtained from them until those planted in the houses will be able to furnish their quota of bloom in succession. Sometimes a rough structure is erected over outdoor ones, should any variety merit it, and over this is drawn some scrim canvas or other cheap material as a slight protection against frost.

It is surprising what a large quantity of bloom can be gathered out of one of those long, low houses usually associated with market nurseries. The plants are put in fairly close together, and in their different colours and varieties so as to simplify the labour of cutting. In packing they are graded, varieties kept separate for colour, etc.

When plants are grown for pot work, that is, sent into the market as such, a little different system is chosen. The plants are grown on in pots from the cutting-boxes, and usually have two shifts, into a thumb-pot and then into one of about six-inch diameter, and this latter is the size it is sent to market in.

Of course it is only growers near large towns that can follow this latter process. They usually have their own horses and vans and send their produce by road.

I was once round a nursery of this description in the neighbourhood of London, where Chrysanthemums were grown on a fairly extensive scale for the market. I saw several houses filled with these pot plants, and remarkably good they were. All the pots were of the size previously mentioned, and each plant had seven to nine or more growths, each carrying a fair-sized bloom. They had been disbudded, and were of uniform height. The colours were *Mdme. Fabre*, pink; *L. Canning*,

white; *Cullingfordii*, crimson; *Niveus*, white; and *Pride of the Market*, deep golden yellow.

Very late varieties are not cultivated to any great extent, there not being the demand, and space being wanted in the houses for the creation of spring crops. As soon as each batch has finished flowering they are thrown out, only sufficient plants being retained for the supply of the next season's cuttings. Their place is quickly taken up by bulbs or used for the forcing of early spring vegetables, and thus the rotation of crops goes on.

SUMMER OR EARLY FLOWERING CHRYSANTHEMUMS

THESE, the most popular of all the sections, may be grown by anyone possessing a garden, whether cottager or villa resident. The culture is simple and the recompense is so exceedingly great; a wealth of glorious colour, from summer to late autumn, helping to prolong the beauty of our plots and borders, when most other flowers are fading or past their best.

Again, they are a most useful adjunct to our public parks and gardens, where they may be seen massed and arranged in harmonious manner, giving a touch of brightness, and extending the bedding system to a much later date than is usual with any other plants. With what ease they may be grown is shown by the quantities that are met with in our large towns. Flower girls may be seen during the season with huge baskets of these flowers, disposing of liberal quantities for modest sums of money. I know of no flower that will outlast the early flowering Chrysanthemum in a cut state, providing the water is frequently changed, and the room is kept in a temperate condition. I have known them last a month with this treatment. Unfortunately, some of the Japanese and Incurves produced later will not conform to this test. Varieties seem to differ a great deal among the later flowering ones as to the way they take up water, even though the ends of the stems are split for the purpose.

The florist finds in the early flowering forms most useful material for the making up of wreaths, crosses, sprays, etc., chiefly from the white, whilst the yellows,

bronzes, crimsons, etc., may be very effectively used, either as cut flowers or pot plants for the decoration of balls, banquets, receptions, etc. That there is a great future before the early flowering race every one will admit.

Much has been done in hybridising of late years, principally with the Japanese forms; and some of the names of raisers associated with this work, or who have helped in different ways to popularise this flower, are Messrs Piercy Taylor and the Rev. F. Freeman, besides our principal trade growers, Sydenham, Wells, Jones, Davis, etc. Across the Channel one name stands out very prominently among raisers of this type, M. Simon Delaux. We are informed that in the year 1891 this enthusiast distributed 125 new early varieties, most of which found their way to this country, many of them still being cultivated at the present day.

We have already some fair-sized blooms in this section, which may be still further increased if disbudding be resorted to, although this mode of treatment does not commend itself to many. I am firmly convinced that in the near future we shall have blooms even earlier than at the present time, and considerably larger in diameter, perhaps almost vieing with their sisters that one views on the show boards in the month of November. We need a hardier race too, that will withstand as much frost and wet as the Starworts.

For a considerable period the Desgrange family were about the best among the decorative or early kinds, but these were quite out-classed with the advent of the Masse group, Mdme. Marie Masse and her handsome offspring, Horace Martin—that delightful yellow sent out from a little nursery in Bedfordshire some years ago, Ralph Curtis, creamy white, Crimson Marie Masse, and Robbie Burns, the latter a very pleasing shade of salmon pink.

All the Masse group are vigorous growers and of a

most floriferous habit, qualities that will recommend them to all lovers of this class of plants.

I must now make mention of the little Pompons, our earliest form of outdoor Chrysanthemum. These were cultivated successfully long before the Japanese forms came in, and have many admirers even down to the present day. Their neat little flowers and dwarf compact habit find favour with many. They may be planted in the same border or beds as the decorative kind, preferably in front of these, as they do not grow so tall. Perhaps a few additional words on their culture may not be out of place. Plants purchased direct from the grower about the month of May will be ready to be planted out into their permanent quarters. The soil should have been well prepared previously by manuring and digging so as to bring it into a thoroughly efficient state for the reception of the plants.

A little gas or slaked lime may, with advantage, be mixed in the soil, especially if it should be deficient in this respect. It will also help to keep away slugs, and act as a purifier generally. A neat stake might mark the site where each plant is to be placed, the length of stake to be in proportion to the height the plant is expected to reach. This will save labour later, and also the roots will not suffer from injury, as is often the case when a stake is driven down through their centre.

Too much attention cannot be given to the plants in the way of tying, especially in exposed situations. The wind is one of the greatest enemies of the outdoor Chrysanthemum, many fine specimens being marred annually in this way. Raffia tape or bast is the best material for tying, and, used in its entire width, is not so apt to cut or chafe the stems and foliage.

In the dry season a slight mulching of short manure and copious waterings will assist them greatly, also when the buds are formed some stimulant in the way of

artificial manure, applied judiciously, is really necessary if good quality blooms are desired.

When the flowering season is past the dead flowers and a portion of stem may be removed, and the crowns covered up with ashes ere the heavy winter frosts set in. This system may not be necessary in many parts of the British Isles. I have seen them stand a severe winter without attention or covering of any kind, and break away quite strongly when spring sets in. Again I have known large plants of all varieties die right out in a winter where the temperature has not dropped lower than 12° Fahr., that is 20 degrees of frost. This has taken place in a wet climate, so we might infer from this that moisture combined with less frost is of a greater destroying nature to plants wintering out of doors than a much colder and dryer atmosphere.

Some growers again suggest lifting the plants, with a good length of stem, from their flowering quarters and laying them in under a sheltered wall or similar situation. When the growths push up in the following year from the old crowns or stools as they are more generally termed, and are of sufficient length, they may be taken off and placed under a handlight, frame, or even out on the open ground. This is a ready means of increasing stock and may be practised by any one. The months of March and April will be found about the best time for this process.

Particular attention must be given them in keeping down slugs, watering with can and rosette when required. Sometimes birds are rather apt to disturb and lift cuttings when hunting for food. Cuttings inserted properly in suitable soil should be ready for transferring to their permanent quarters at the end of six or eight weeks at the most. Certainly some varieties root faster than others. About the third week in May is considered the general period for planting.



AMY LAIDMAN

If really necessary the old stools may be divided up and replanted, although I don't consider this process so gratifying as young plants grown on from cuttings. Most of our new varieties are now British raised, thanks to the energy and perseverance of our trade growers and enthusiastic amateurs. For those who are desirous of experimenting in hybridising, particulars are given in another part of the book.

Below I am giving 50 of the best of the decorative kinds, 25 early and 25 later ones, together with 12 Pompons. This has been kindly supplied to me by Mr Sydenham of Tamworth, who makes a speciality of hardy flowering Chrysanthemums. This list was chosen out of several hundred varieties of the outdoor section, by a committee of experts appointed for the purpose. They met in September and again in October, and drew up this list, which really constitutes the cream of the decorative kinds.

**TWENTY-FIVE CHRYSANTHEMUMS—EARLY VARIETIES,
FLOWERING PRINCIPALLY THROUGH SEPTEMBER**

1. Blush Beauty.—Colour pale blush, height $2\frac{1}{2}$ feet.
2. Robbie Burns.—Rosy cerise. Sport
from Mdme. M. Masse, $2\frac{1}{2}$ feet.
3. Cactus.—Deep terra-cotta, very free
and useful, 2 feet.
4. Carrie.—Rich deep yellow, splendid
for cutting, improved by disbudding, 2 feet.
5. Claret.—Very showy and free, 3 feet.
6. Craigmillar.—Good bright yellow, and
free blooming habit, 2 feet.
7. Doris Peto.—Pure white, very dwarf, $1\frac{1}{2}$ feet.
8. Esperance.—White with cream centre,
flowering freely, 2 feet.

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9. Fir Japonais.—Creamy white with long curling and drooping petals, . . . 2 feet.
10. Goacher's Crimson.—Bright crimson, large flowers of good form; a popular variety, . . . 2½ feet.
11. Henry Yvon.—Rosy salmon on yellow ground, . . . 2 feet.
12. Horace Martin.—Deep yellow. Sport from M. Masse, . . . 2½ feet.
13. Jimmie.—Purplish crimson, large flowers, and freely produced; a valuable kind, . . . 2 feet.
14. Lilly.—Pearly pink flowers of good size, . . . 2 feet.
15. Maggie.—Bright pure yellow, free and dwarf, . . . 1½ feet.
16. Mrs A. Willis.—Yellow shaded bronze. Sport from Mdme. Casimir Périer, . . . 2½ feet.
17. Mrs Baird.—Bright pink shading to salmon and white. Sport from M. Masse, . . . 3 feet.
18. Mychett White.—Pure white, one of the best; a good old variety, . . . 2 feet.
19. Nina Blick.—Bright reddish bronze. Very free and of good habit, one of the best, . . . 3 feet.
20. Norbet Puvreez.—Rich golden salmon as grand variety and dwarf, . . . 1½ feet.
21. Orange.—Deep orange or terra-cotta, . . . 2½ feet.
22. Polly.—Orange amber, shading to chestnut, dwarf bushy habit, with grand flowers, . . . 2 feet.
23. Roi de Blancs.—Pure white, a beautiful and chaste flower, good for cutting, . . . 2½ feet.
24. Rosie.—Terra-cotta, very free, good habit, flowers of good size and form, . . . 2 feet.

25. White Masse.—White sport from M. Masse, good for cutting, a useful variety, 3 feet.

TWENTY-FIVE LATER FLOWERING VARIETIES FOR OCTOBER

1. Anna.—Creamy white, very fine flower, 5 feet.
2. Bronze Dwarf.—Crimson with golden reverse, 3 feet.
3. Champ d'Or.—Deep clear yellow of splendid sturdy habit, fine for massing, 2 feet.
4. Col. Bernand.—Rich salmon red, a grand flower, 4 feet.
5. Constancy.—Buff shaded, reddish amber, 2½ feet.
6. De la Guille.—Deep orange, a great favourite, 4 feet.
7. Dolly Prince.—Purest white large flowers of fine form, 2 feet.
8. Emilie.—Large creamy white, 3 feet.
9. Emperor Nicholas.—Dark crimson flower, late October, 4 feet.
10. Esmeralda.—White, slightly blushed, 3 feet.
11. Flambeau.—Fiery red, shaded salmon, fine habit and flower, 4 feet.
12. Frankie.—Orange, shaded bronze, bushy habit, 2 feet.
13. Coach's Pink.—Bright pink large flowers of good form, a well-known variety, 3 feet.
14. Guinea Gold.—Deep golden yellow, —
15. Harvest Home.—Bronze red and gold, very pretty, 3 feet.
16. Le Pactole.—A handsome variety, large flowers of bright red and rich bronzy yellow, 3 feet.

17. Mabel Adams.—Apricot, large full flower, 2 feet.
18. Miss B. Miller.—Deep golden yellow,
large flowers with narrow floret, . 2 feet.
19. Mrs J. Harding.—Deep crimson-shaded
claret, 3 feet.
20. Mychett Crimson.—Crimson with golden
bronze reverse, bushy habit, . . . 3 feet.
21. Parisiana.—Very good white, . . . 3 feet.
22. Perle Chatillonnaise.—Pearly white flushed
with pink, pretty and distinct, . . . 3 feet.
23. President Lefevre.—Blush pink, golden
centre, 3 feet.
24. Ryecroft Beauty.—Pretty soft pink, . 4 feet.
25. The Champion.—Very rich yellow,
good for cutting, 2 feet.

In the fifty foregoing Chrysanthemums there is splendid choice for colour, grouping, etc. They are all of good habit and constitution, and thoroughly reliable.

To obtain the best result, when planting these in beds or borders, a system of massing should be resorted to. The borders should not be less than 6 feet wide, which would admit of three different heights being used: the Pompons or dwarf Japanese at the front, then medium in centre, and lastly the Masse or other groups at the back. If the border allows, a good plan would be to plant all varieties in threes—at least the front rows should be carried out on this system—and again mass the whole of the colours in broad belts, just the same as a well-designed colour scheme in a herbaceous border. Should small beds be utilised for the planting of Chrysanthemums, only use at most one or two colours. This will have a far more telling effect than if a dozen different varieties were planted there. A mass of colour in the distance attracts the eye, with a feeling of impulse to view it closer.



NORFOLK BLUSH

Appended is a list of twelve good pompons for outdoor use.

Anastasia.—Light purple, bushy habit,	1½ feet.
Blushing Bride.—Bright rosy lilac, large and full,	2 feet.
Bronze Bride.—Rosy lilac and gold, pretty,	2 feet.
Filberta.—Bright canary yellow,	2 feet.
Golden Beauty.—Bright gold, very fine,	2 feet.
Golden Bronze Bride, similar to parent, but shaded bronze,	2 feet.
J. B. Duvoir.—Pale pink,	1½ feet.
Little Bob. — Crimson bronze, small flowers, excellent for bedding,	1½ feet.
Mignon.—Deep golden yellow,	1¼ feet.
Mrs E. Stacey.—Deep apricot,	1½ feet.
Mr Selly.—Rosy lilac, dwarf compact habit,	1½ feet.
Orange Pet.—Orange shaded red, free, one of the best,	2 feet.

As a guide in planting, the height of the plant given should mean about the same distance apart for that variety to be planted. This will answer for most of the Japanese; but as the pompons are inclined to be more bushy, a general distance of 2 feet should be allowed.

FIFTY JAPANESE EXHIBITION VARIETIES

SELECTED by Mr N. Davis as thoroughly reliable and up-to-date.

1. Algernon Davis.—Rich orange yellow, with reddish crimson shading ; colour comes often deeper on later buds.
2. Beatrice May.—A massive deep bloom, white with mauve rose flushing.
3. Bessie Godfrey. — Canary yellow, more or less flushed with bronze, very large flower and of easy culture.
4. British Empire.—Deep rich orange, with shading of bronze ; a most magnificent bloom.
5. Chrysanthemiste de Montigny.—Soft creamy yellow, very full flower, with long floret.
6. Duchess of Sutherland.—Rich golden yellow in colour ; florets long and curling.
7. E. J. Brooks.—Incurve Japanese, colour of deep plum purple, with light reverse.
8. Eleanor, Duchess of Northumberland.—Large pure white, with edging and flushing of lilac.
9. Ethel Fitzroy.—Of orange amber colour ; a lovely flower.
10. F. S. Vallis.—Light canary yellow, graceful drooping florets ; a most popular variety.
11. F. G. Oliver.—A deep large flower ; colour, a pretty tint of pink.
12. General Hutton.—Rich golden yellow, slightly tinted with red.

13. Henry Perkins.—Reddish crimson, a large beautiful flower.
14. George Lawrence.—Rich golden bronze with red flushing, long drooping florets.
15. G. J. Warren.—Canary yellow; Sport from Mdme. Carnot.
16. Henry Perkins.—Of reddish crimson colour; a large beautiful flower.
17. J. H. Silsbury.—Bright crimson, with clear golden reverse, very long drooping florets; a splendid exhibition flower.
18. Leigh Park Rival.—Orange yellow with bronze shading.
19. Mdme. Carnot. — Pure white; an immense flower.
20. Mdme. G. Rivol.—Clear yellow, shaded old rose; Sport from Mdme. Palolo Radaelli.
21. Mdme. M. de Mons.—Large white, with pale mauve edging.
22. Mdme. R. Oberthur.—Ivory white with slight pink flushing; a very fine flower of great depth and beauty.
23. Mdme. Paolo Radaelli.—Incurved Japanese; colour, white flushed pink, enormous flower.
24. Mafeking Hero.—Light crimson, with metallic shading on reverse of petals.
25. Marquis V. Venosta.—Rosy pink, a fine large flower of easy culture.
26. Marquise Viscomte Venosta.—Large pure white, tinted green in centre, loosely petalled.
27. Magnificent.—Rich crimson, long narrow florets.
28. Miss Elsie Fulton.—Pure white, with very slight green shading; a most lovely flower and great favourite.
29. Miss Olive Miller.—Reflexed Japanese; colour, a pretty shade of rich pink.

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30. Miss Hickling. — White, with long, gracefully drooping florets.
31. Miss Miriam Hankey. — Rosy pink, with long curling florets.
32. Miss Kathleen Stoop. — One of the largest whites in cultivation; a monster flower.
33. Mrs A. T. Miller. — Very fine white, with broad incurving florets.
34. Mrs A. H. Lees. — Very deep velvety crimson; a large and massive show flower.
35. Mrs Barkley. — Soft rosy mauve, with silvery reverse, very broad petals.
36. Mrs F. W. Vallis. — Crimson, with terra-cotta shading, beautiful long twisting florets.
37. Mrs George Mileham. — Rich rosy mauve, with deeper shading, long, broad, drooping petals, of easy culture.
38. Mrs R. Hooper Pearson. — An exceedingly pretty flower, with long curling florets, of lemon yellow colour, shaded red.
39. Mrs J. Dunn. — Pure white, with broad flat drooping florets.
40. Mrs W. Knox. — Deep chrome yellow, flushed red, a full handsome flower.
41. Mrs W. Mease. — Pale creamy yellow; Sport from Mdme. Carnot, one of the best of its family.
42. Mrs H. Barnes. — Japanese incurve, old rosy terra-cotta.
43. Norman Davis. — Brilliant chestnut and old gold; long, broad, drooping florets of good substance; a most handsome flower and of easy culture.
44. President Loubet. — White tinted rose; immense long, drooping florets; one of the finest of Mons. Calvat's raising.
45. President Viger. — Purple violet, with immense long broad petals.

46. Reginald Vallis.—Light purplish amaranth, long narrow florets; a very popular variety.
47. Sidney Penford. — Bright reddish crimson, with extra-long spreading florets.
48. Viola.—Light rosy pink, an immense flower, petals long and curled.
49. Walter Jinks.—A pleasing rich rosy pink of massive form.
50. W. R. Church.—Rich purplish crimson, with extra stout florets.

INCURVED VARIETIES SUITABLE FOR EXHIBITION

A LIST of these varieties has been kindly chosen for me by Mr Norman Davis of Framfield, Sussex. He is a man well known in the Chrysanthemum circles. All the numbers in the list are thoroughly reliable, but the first twenty-five are considered the best by Mr Davis :—

Buttercup.—Bright yellow, large, well-built flowers ;
one of Mr Davis's introductions.

Charles H. Curtis.—Golden yellow, very full with
narrow florets, a well-known variety.

Duchess of Fife.—White tinted lilac.

Frank Hammond.—Rosy, bronze, fine flower.

Globe d'Or.—Orange yellow, shaded red.

Lady Isabel.—Lavender blush, a massive flower.

Ma Perfection.—Pure white, dwarf habit.

Margaret Brown.—Purple lilac, silvery reverse.

Mdme. Ferlat.—Pearly white, large, beautiful flower.

Miss E. Seward.—Deep yellow tinted, reddish brown.

Miss N. Southam.—Deep rosy purple, constant and
good.

Mdlle. Lucie Faure.—Pure white, of immense size.

Mrs Barnard Hankey.—Metallic bronze colour, a fine,
close, well-built flower.

Mrs C. Crooks.—Large, white, true incurve type.

Mrs F. Judson.—Similar to C. H. Curtis in shape, but
pure white in colour.

Mrs H. J. Jones.—Soft rosy white, fine form, a superb
flower.



HARRIE (EARLY FLOWERING)

- Mrs J. P. Bryce.—White flushed pink, rather loose in petal.
- Mrs J. Seward.—Golden buff, solid, and very fine form.
- Mrs W. C. Egan.—Rosy lilac, very large flower.
- Pantia Ralli.—Bronzy buff, a flower of good standing.
- Romance.—Rich yellow, said to be an improvement on C. H. Curtis.
- Topaize Oriental.—Pale straw yellow, a finely moulded flower.
- Triumph de Montbrun.—Inside of florets rosy crimson, outside light buff, sturdy habit.
- William Biddle.—Deep lemon, with shading, an immense perfect flower.
- Frank Trestian (new).—Bright, buff amber, a choice flower of fine form.
- J. G. Shrimpton.—Bright golden yellow, somewhat resembling C. H. Curtis and Buttercup.
- Amber Beauty.—Clear shade of orange amber, long pointed florets, very distinct and fine.
- A. H. Hall.—Deep purple, slightly shaded bronze, an immense flower of almost perfect form.
- Chrysanthemiste.—Bruant rosy buff, deep flower.
- Comtesse d'Estoile.—Blush white, sturdy grower.
- C. J. Ellis.—Bronze red.
- Embleme Poitevine.—Rich golden yellow, finely built flower, petals beautifully incurving.
- Fred Palmer.—Full blush pink.
- G. F. Evans.—Chrome yellow, large, globular-shaped flower.
- G. W. Matthews.—Soft amber yellow, base of petals cinnamon red.
- Hanwell Glory.—Bronze yellow, good form.
- Hilda George.—Silver mauve, a fine flower of good habit.
- Jalene.—Bright rosy lilac, immense size and good shape.

Matthew Russell.—Deep bronzy red.

May Phillips.—Creamy yellow, slightly tinged with red,
a massive, well-built flower.

Mildred Lyne.—Rich golden bronze, Sport from Mrs
H. J. Jones.

Miss Annie Hills.—Soft blush pink, very fine.

Miss F. Southam.—Rosy buff.

Mrs A. H. Hall.—Rich chocolate colour of exceptionally
good form, quite distinct.

Mrs G. Denyer.—Silvery pink, a perfect incurving
flower, large and good.

Nellie Threefall.—Large creamy white.

Pearl Palace.—White, with pink shading, good habit.

Ralph Hatton.—Purple lilac, very fine flower.

Souv. de Wm. Clibran.—Pure white, a massive flower
of most perfect shape.

W. Pascoe.—Soft lilac pink, a giant flower of good
incurving habit.

REFLEXED VARIETIES

MOST of the reflexed forms are rather antique. They are, however, very interesting as a class and exceedingly useful for decorative purposes, some of the colours being very bright and pleasing.

Boule de Nieve.—Fine late white.

Chevalier Domage.—Yellow.

Dr Sharpe.—Magenta crimson.

Emperor of China.—Blush.

Julia Lagravere. — Dark crimson, good decorative variety.

King of Crimson.

Progne Amaranth.—Violet scented.

Putney George.—Bright crimson, tipped with gold.

Pink Christine.—Light pink.

Temple of Solomon.—Yellow.

White Christine.

White Emperor of China.

LIST OF DECORATIVE VARIETIES

- Avalanche.—Pure white, good vigorous habit.
Beauty of Exmouth.—Pure ivory white.
Bessie Chapman.—Bronze yellow sport from La Triomphante.
Bronze Fabre.—Rosy bronze sport from M. Fabre.
Clinton Chalefont.—Golden yellow, splendid habit.
Col. W. B. Smith.—Rich reddish bronze.
Crimson Source d'Or.—Crimson sport from that popular decorative variety.
Cullingfordii.—Dark crimson.
Eda Prass.—Pearly blush, good bushy habit.
Elaine.—The purest of whites.
Florence Davis.—White, with green centre.
Florence Piercy.—White, with pretty wavy petals.
Gloire du Rocher.—Bright crimson scarlet.
Lady Canning.—Pure white, good for Christmas and New Year, dwarf, free habit.
Lady Selborne.—White, an old favourite.
Lady Hanham.—Golden rosy cerise sport from V. Morel.
La Triomphante.—Pink shaded rose, very free.
Lizzie Adcock.—Yellow sport from Source d'Or.
M. G. Nagelmackers.—Pure white.
Mdme. C. Ricoud.—Lovely flesh pink, curled petals.
Mdme. M. Fabre.—Rosy pink, good foliage, late.
Mdle. Thérèse Rey.—Clear ivory petals, a grand flower.
Moneymaker.—Pure white, good habit.
Mons. N. Holmes.—Crimson, shaded gold.

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Mrs E. V. Freeman.—Vivid crimson, of good form.

Niveus.—White blooms, of good substance, good late.

O. J. Quintus.—Rose pink, profuse bloomer.

Pride of the Market.—Deep yellow, free outstanding florets.

Red Canning.—Bright red. Sport from L. Canning.

Source d'Or.—Pure bright bronze, an old popular favourite.

Stanstead White.—Pure white, useful decorative, late.

Soleil d'Octobre.—Canary yellow, grand foliage, and habit very free.

Sunstone.—Apricot, pretty, pleasing colour, long incurving florets.

Tuckswood White.—Pure white, late, very free, dwarf habit.

Tuxedo.—Orange yellow, good constitution, blooming freely in December and January.

Val d'Andorre.—Brilliant crimson, very free and useful.

Viviand Morel.—Deep mauve, one of the best.

Western King.—A grand white, rather late.

W. H. Lincoln.—Rich golden yellow, very lasting in flowers, good late.

William Seward.—Very dark crimson, a lovely colour.

Yellow Triomphante.—Clear yellow. Sport from La Triomphante.

LIST OF SINGLE FLOWERING CHRYSANTHEMUMS

Revised by Mr H. J. JONES, of Ryecroft Chrysanthemum
Nurseries, Lewisham

EARLY FLOWERING SINGLE GARDEN VARIETIES introduced or raised by H. J. JONES

- Venus.—Bright lake with yellow disc, large flower.
Mrs C. Curtis.—Deep rich crimson, good habit.
Eclipse.—Fine form, rich amaranth colour.
Distinction.—Very early flowering, rosy cerise.
Pink Beauty.—Two rows of petals arranged round a
good disc.
Pride of Merstham.—Reddish purple, October flower.

GENERAL LIST OF SINGLE VARIETIES

- Acme.—Colour rich bright pink, good disc, immense
flower.
Bronze Edith Pagram.—Beautiful flower, sport from E.
Pagram.
Beauty of Kent.—Golden amber, large blooms and free
flowering.
Coronation.—Delicate pink on creamy ground, very large
flower.
Delicatissima.—Creamy white with pinkish shading, with
perfect petals.
Dorothy Fortescue.—Pure white, large handsome flower,
useful at Christmas.
Dora Godfrey.—Soft canary yellow, a charming flower
and pretty in sprays.



GOACHER'S PINK (EARLY FLOWERING SECTION)

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- Pretoria.—Deep yellow with green centre, a large handsome flower.
- Purity.—Purest white, fine free habit.
- Queen Alexandra.—Pink, slightly shaded mauve, large and handsome.
- Queen Auratia.—A most distinct flower, colour bright vermilion on opening, passing to a pretty shade of orange scarlet later.
- Queen of Norway.—A beautiful yellow flower, slightly shaded red.
- Reine des Roses.—Fine, rich, clear rose.
- Rosalind.—Soft pink colour, sweetly scented.
- Rosy Morn.—Pretty pointed petals, rich rose and white.
- Ryecroft Star.—Very elegant and pretty, deep rosy pink.
- Robert Morgan.—Rosy amaranth flowers freely produced.
- Rosie.—Pretty star-shaped flower, colour rosy pink with bold yellow disc.
- Rosie Bell.—Another pretty variety similar to former in colour, slightly deeper tint.
- Ryecroft Belle.—Charming for table decoration, rich pink colour.
- Stella, fine.—Large, white.
- Star of Honour.—Pure white with anemone centre.
- Sir George Bullough.—Deep yellow, one of the best, good free habit.
- Sir R. Buller.—Gold, with chestnut shading, fine large flower.
- Sheila.—Pure white, very free, and dwarf.
- Thirza Cherry.—Novel tubular florets with spoon-shaped tips, colour soft mauve.
- Winnie Sherring.—Apricot colour, large pleasing flower.
- Winifred Hall.—Deep velvety crimson, large and handsome.

LARGE ANEMONE FLOWERING

- Delavere.—Creamy white, fine large flower.
Descartes.—Crimson red.
Ernest Cooper.—Cream with yellow centre.
E. C. Jukes.—Rich purple magenta, gold centre.
Gluck.—Golden yellow.
J. Thorpe, Jun.—Bright yellow.
Mdle. Nathalie Brun.—Silvery white, gold centre.
Miss Annie Lowe.—Primrose yellow.
Mrs Pethers.—Lilac rose centre.
Prince of Anemone.—Lilac blush.
Snowdrift.—Pure white, typical-shaped flower.
Stoneacre Gem.—Yellow shaded red.

JAPANESE ANEMONE FLOWERED

- Caledonia. — White guard petal, centre lilac shaded yellow.
M. Pankouke.—Claret brown, tipped bronze.
Owens Perfection.—Lilac guard and disc.
Rider Haggard.—Deep pink, shaded yellow.
Tam-o'-Shanter.—Rosy lilac, high disc edged yellow.
W. W. Astor.—Salmon blush guard, disc rose and yellow.

POMPON ANEMONES

- Grace Darling.—Lilac blush.
Calliope.—Ruby red.
Mdme. Montel.—White guard florets, yellow disc.
Reine des Anemones.—Pure white, small.
Rose Margarite.—Bright rose.
Virginale.—White guard.

POMPONS

- Black Douglas.—Dark crimson.
Eleonore.—Crimson, edged yellow.
Golden Mdle. Martha.—Yellow.
Klondike.—Brilliant yellow.
Kyrle Bellew.—Crimson yellow.
Mdle. Martha.—White.
Miss Ada Williams.—White-shaded blush.
O'Neila.—Bright clear yellow.
Pat.—Pure white, fine form.
Quinola.—Deep clear yellow.
Sœur Melanie.—Pure white, very popular.
William Kennedy.—Crimson.



ROYAL HORTICULTURAL SOCIETY, ST. VINCENT SQUARE. GROUP OF CHRYSANTHEMUMS EXHIBITED BY MESSRS. WELLS AND CO.,
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NOVEL VARIETIES

A LIST of Novel Varieties peculiar for the arrangement or form of their petals, including Hairy Varieties, the latter supposed to have been raised in America, but really originated in Japan.

Beauty of Truro.—Yellow ground, flushed with purple, sport from the Hairy Louis Boehmer.

Enfante de Deux Mondes.—Pure white, sport from L. Boehmer.

Esau.—Lovely salmon rose, very hairy.

Mdme. M. Marchant.—Rosy blush, large blooms, slightly hairy.

Midnight.—Crimson bronze, large blooms, densely covered with hairs.

Mrs Alpheus Hardy.—Pure white, a beautiful variety, hairy.

Mrs C. B. Freeman.—Deep golden yellow, sport from Louis Boehmer.

Mrs W. J. Godfrey.—Purest white, petals broad and incurving, very late.

Tatcho.—Yellow flushed rose, lovely colour, sport from Mrs C. B. Freeman, very hairy.

Louis Boehmer.—Delicate shade of rose pink, blooms densely covered with hairs.

VARIETIES WITH CURIOUSLY TWISTED PETALS

Æsthetic.—Single var., old gold, good, with artificial light.

Canary Bird.—Clear yellow, long-plumed florets, good for Christmas decorations.

Cannell's Favourite.—Pure white, grand decorative variety.

Centaurea.—Deep orange yellow, twisted thread-like petals.

Golden Shower.—Reddish bronze, very fine drooping florets.

King of the Plumes.—Rich yellow, very dwarf and late.

Mrs Felkins.—Bright yellow florets, split at the ends.

Mrs W. Butters.—White large fluffy variety, grand for cutting.

Sparkler.—Bright Indian red, slightly tipped with gold, a charming decorative variety.

Sam Caswell.—Deep pink, large spidery blooms.

White Thread.—Pretty and free, flowering, slender, thread-like florets.

Unique.—Velvety crimson florets, long and quilled, incurving and twisting.

OLD FAVOURITES

IN the foregoing lists I have tried to include all the most up-to-date and reliable varieties that will render a satisfactory return for the attention bestowed on them.

But what has become of the favourites that graced the showboards of some twenty years ago? Alas, many are almost gone and forgotten; but I am glad to record the attempt by some of resuscitating some of the old Incurves, such as the Rundle family, those charming little flowers, typical of what a true Incurve should be, the petals naturally arranged as neatly as the feathers on the breast of a bird.

I refer to Mrs G. Rundle, white, Mrs Dixon, a golden yellow, Mr George Glenny, a sulphur primrose, and others.

And the culture is so easy. I well remember some of these in a southern county many years ago. They were planted out in a quarter of the garden, and gave a quantity of bloom. When the frost came on a slight framework was fitted over them, and on this was rolled some old tiffany blinds that had done duty on the stoves and greenhouses. This answered most efficiently, and cutting was usually carried on late in November and sometimes even to December.

Many, too, of the Reflexed kinds have gone out of date. There is Elaine without a rival, even at the present day, for purity of its snowy petals; Maiden's Blush, creamy white; Progne, a dark-coloured form, with a most agreeable scent; Cullingfordii, dark crimson; Distinction; Chevalier Damage.

92. BOOK OF THE CHRYSANTHEMUM

The Incurves have not been added to in such numbers as the other classes, consequently many of the old types are still cultivated largely. I refer to the Queen family, Queen of England, Empress of India, Lord Alcester, and Golden Empress, Mr Bunn, deep yellow. The out-of-date Japanese, other than for decorative purposes, would cover a big space. I will enumerate a few, as Mdlle. Lacroise, pure white; Meg Mervilles, sulphur and white; W. Holmes, crimson; Val de Andorre, chestnut orange; Fair Maid of Guernsey; Peter the Great, lemon; Mons. Delaux, reddish crimson; Mons. Astorg, silvery white with blush centre; Ralph Brocklebank, primrose yellow; Boul d'Or, rich yellow; Fernand Feral, rosy-mante; Mdme. C. Audiger; Mons. Freeman; Edwin Molyneux, and a host of others. All these were favourites of the first water in their day, and now but few of them will be found in growers' lists.

CHRYSANTHEMUMS IN ROOMS

CHRYSANTHEMUMS IN GLASSES

It is a great mistake to cut huge blooms of this family with only a few inches of stem, inserting them in small glasses for a table decoration, and, giving them a very top-heavy appearance. The best system of arranging large blooms is to cut them with a good stem length, two to three feet, and arrange several blooms of one variety, or two at the most, in a large vase and place it in a suitable position on sideboard or table. If the flowers are light in colour, they may stand in a dark corner of the room, but if bronze or deep reds are used they should be arranged where a good light can be obtained for them. For dinner tables small flowering chrysanthemums are the best for all ordinary purposes. As many rooms are now lighted with coloured electric lamps it will be well to choose suitable colours in the flowers that will harmonise with these lamps. Perhaps the two safest are the yellows and light pinks, whites excepted. Crimson will go well also with certain shades. Often the lamp will add a deeper tint to the flower and even alter its character altogether. The colour of a flower should be tested with a lamp before deciding to carry out any scheme of arrangement in this respect.

PLANTS FOR DECORATION

I sometimes wonder why those who have to do a large amount of furnishing do not cultivate the decorative

types of Chrysanthemums in something else than the orthodox flower-pot. It has always the same shape, and generally the same colour. I remember seeing some time ago, in the *Garden*, an illustration of Chrysanthemums arranged on a racecourse in China. It was a Chrysanthemum show, and the plants in the illustration had been grown in bowls much the same in appearance as those in which the pigmy trees of Japan are grown.

These bowls or urns must be manufactured at a fairly cheap rate judging by the way they are used in the Far East. That they are durable is beyond question, and I think it would pay some manufacturer to take up the idea and produce or import something similar.

The best kinds of Chrysanthemums for decoration are given in a list elsewhere. I will only give a few details here of some of the principal kinds suitable for the purpose. All the Masse family are capital in this respect, and give us shades in crimson, yellow, and brown. Two small whites, La Vierge and the old Mdme. Desgrange, are in about the same period.

The former of the two is the dwarfest, yet the blooms will last longer on the plants than M. Desgrange. There is Harvest Home and Market White, both good in their way, also Lady M. Fitzwigram, another good white. Following them come that good yellow, Soleil de Octobre, with large flowers. Some of the small In-curves, too, are decidedly pleasing, especially the Rundle family. The singles, Miss Rose, Miss M. Anderson and her yellow colleague, Miss Holden, are all worthy of a place, besides many others. For Christmas and the New Year period there are many good ones—Niveus, a first rate white; G. Lincoln, a good standing yellow; M. Fabre, pink; Princess Victoria, creamy white.

CONCLUSION

IN conclusion, I have to thank many friends who have assisted me in compiling this book of the Chrysanthemum.

Particularly am I indebted to Mr Norman Davis, of the Chrysanthemum Nurseries at Framfield, Sussex; Mr R. J. Jones, Lewisham; and Mr R. Sydenham, of Tamworth, who have helped me in the selection of varieties, also to another good friend, Mr Geo. Wythes, V.M.H.

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